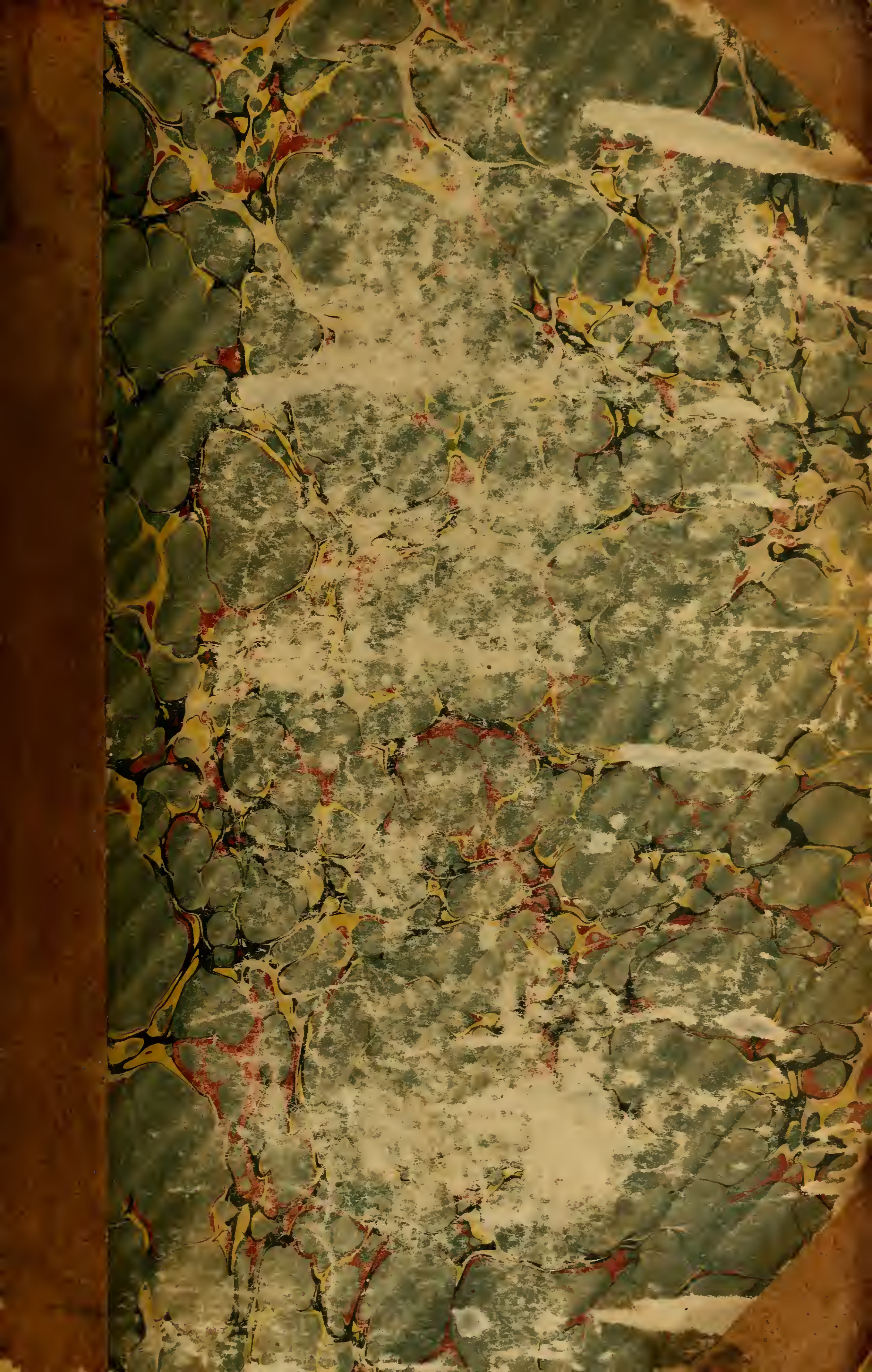

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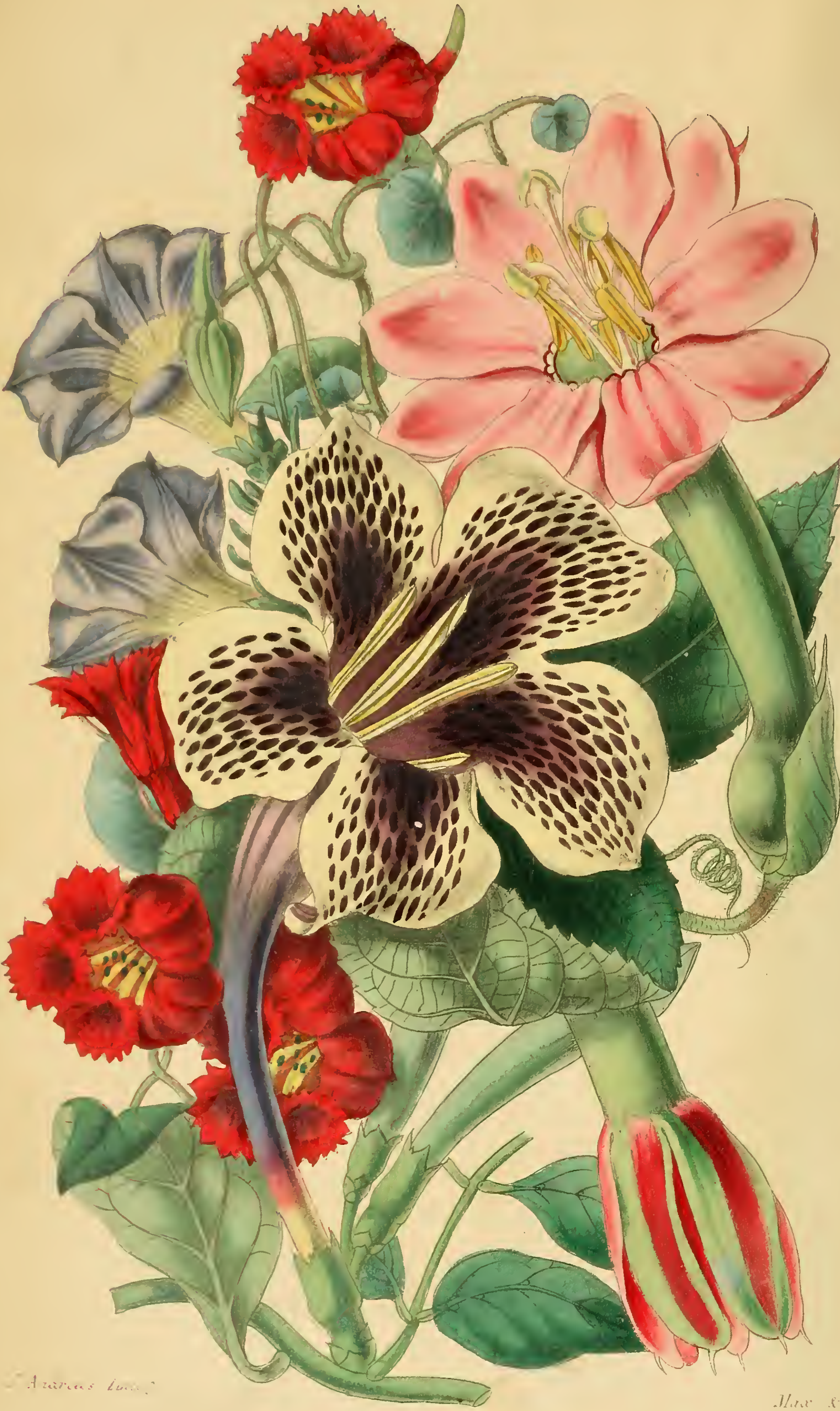

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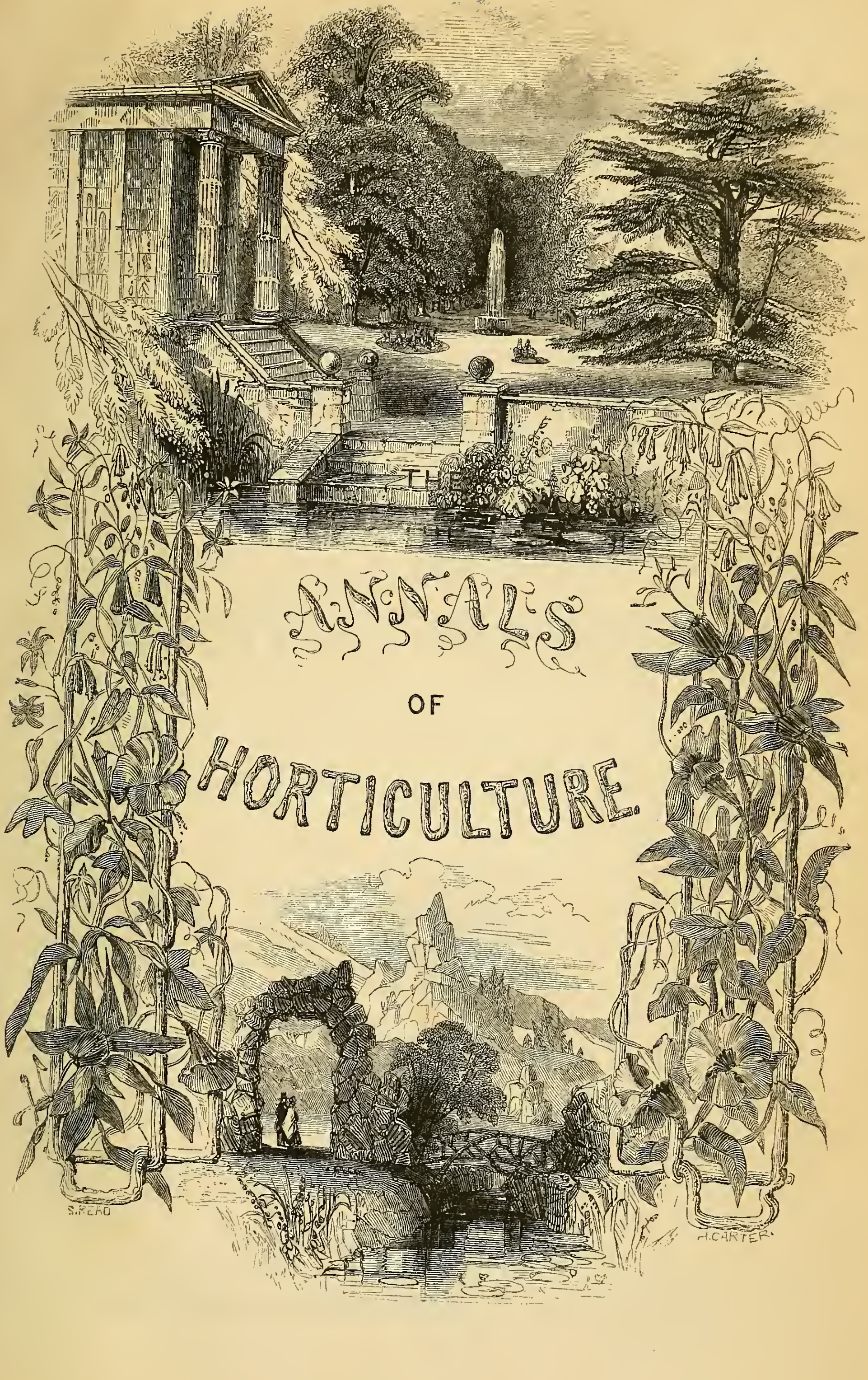
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AND

Year-Book of Information

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1846.

TO

THE RIGHT HONOURABLE

THE EARL OF AUCKLAND

KNIGHT GRAND CROSS OF THE ORDER OF THE BATH

VICE-PRESIDENT OF THE HORTICULTURAL SOCIETY OF LONDON

&c. &c. &c.

THE PROMOTER OF HORTICULTURE IN BRITISH INDIA

AND ITS FRIEND AND PATRON AT HOME

This Volume

IS WITH HIS LORDSHIP'S PERMISSION

RESPECTFULLY DEDICATED

BY HIS LORDSHIP'S

MOST OBLIGED AND DEVOTED SERVANT

THE EDITOR.

736

PREFACE.

The Annals of Horticulture is unquestionably the most appropriate title that can be given to a volume which contains the most authentic and interesting records appertaining to the various branches of the Science, and, so far as can be gathered, all the improvements, and useful novelties in the practice, the means, and the productions of British gardens. The fact, with which many amateur and professional Gardeners are acquainted, of the work having appeared in numbers, as the "Horticultural Magazine," in nowise interferes with the application of another title to the finished volume, nor is its value as a library book thereby affected, inasmuch as nothing ephemeral, nothing of mere temporary interest, or of doubtful merit, has been admitted to its pages.

It may be observed, that the pens of some of the most popular writers of the day are engaged in this Miscellany; and a reference to the various Treatises, on the Rose, Lily, Stock, Wallflower, Balsam, Passion-flower, Fuchsia, Nasturtium, Amaryllis, Cineraria, Holly, Campanula, Calceolaria, Geranium, Cratægus, Melon, Grape, Peach, Pear, Potato, &c. &c., will convince the most fastidious critic of the practical talent concentrated in the work; while the descriptive flower lists will render it at all times a most valuable and indispensable companion to the lover of flowers and the cultivator of gardens.

The "Practical Gardening" for every month in the year, although in some respects necessarily like preceding directions, has the merit of combining the best of the old lessons with much that is new; and, being founded on experience, the whole may be relied on as applicable to every amateur Gardener's establishment, and useful to many who have been cultivators all their lives.

It is intended that one volume, similar to the present, shall be completed annually, embracing a perfect History of Gardening for the year, and a description of every flower, plant, fruit, and vegetable that is introduced during the period. With this view, the many novelties produced from time to time will be carefully recorded, and all that is new, useful, and interesting, will be published, as heretofore, in monthly parts, as the "Horticultural Magazine," and in due time form the "Annals of Horticulture" for the year.

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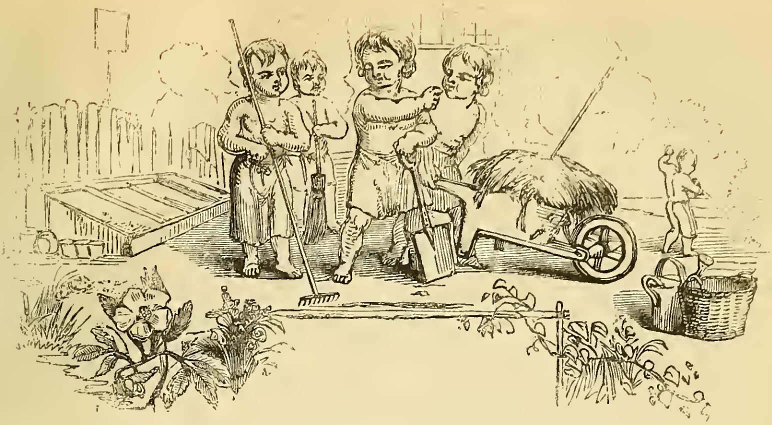


PRACTICAL GARDENING.

OPERATIONS FOR JANUARY.

The practice of the gardener in each month of the year is so much alike in all places, that it seems almost unnecessary to apologize for directing the same as other persons have directed before, for that is inevitable. We may, perhaps, be more plain and familiar than some have been, but it is impossible to be original with a subject that has been handled in every conceivable way for the last century. That the practice has been improved, as compared with that of Miller and Abercrombie, there can be no doubt; but the principles laid down by those writers have prevailed to the present day, although new ones have been introduced. It must be mentioned, too, that although the practice for each month will be given in detail, it will be found advisable to vary it a little in particular localities. The round of operations for the year will be found complete ; but the difference of climate, in the extremes of north and south, can suggest the beginning, middle, or end of a month for the operations mentioned therein. It will occur, that in some months the weather will defeat us altogether; for extreme wet is nearly as bad as frost and snow. Better, indeed, is it to let all the men be idle, than to let them tread about the ground when it is saturated with rain, although it is good to plant when there has been some wet. Interruptions by extreme wet, and by frost and snow, will occasionally delay operations of many kinds, but there should be the greater care taken to keep well a-head with everything, and great diligence must be used to bring up arrears of work when any unavoidable delays have taken place. The operations in a garden require, perhaps, a little explanation to the novice ; but to those who are familiar with them all, it may seem quite unnecessary. They should remember, however, that there are many persons to whom the terms trenching, thinning, hoeing, earthing, dibbing, pruning, &c., are as strange as some chemical terms are to even intelligent gardeners. The explanations will, however, be short. *Digging*, is the act of slicing out the earth the depth of a spade, by thrusting it down with the foot, bending it backward so as to lift out the spadeful and turning it bottom upwards, by which means the whole of the soil, to the depth of nine or ten inches, or more, is completely turned over bottom to top and top to bottom. To do this properly, the earth has to be taken out half along the intended breadth of the piece to be dug, and wheeled to another part, generally as handy as you can to the place where the digging will leave off, because there will be a trench left there, which must be filled up with the stuff taken out at first: this is called digging. *Trenching*, is what may be called double digging ; that is to say, the trench made at first must be twice as wide, and two spades deep instead of one. This trench is to receive the top spit, which is thrown into the bottom, and in digging down the second spit, it is thrown on the top ; thus the earth is turned up two spits deep instead of one. *Earthing*, is drawing earth into a ridge or heap round the stems of plants, such as peas, beans, brocoli, and especially celery, which requires it to make it white, or bleach it. *Hoeing*, is chopping off weeds to destroy them, or plants to thin them. *Raking*, is sweeping the ground, as it were, with an iron comb or rake, by which all weeds, stones, and rubbish are drawn off the beds, paths, &c. *Drilling*, is drawing a deepish mark with the corner of the hoe, by which a sort of gutter is made of any depth you please for the purpose of sowing seeds. *Planting*, is placing a plant in the earth. *Transplanting*, is the same thing, but generally applied to the removal of plants from the seed bed to some other place. *Sowing*, is the depositing of seeds in the ground, by sprinkling it over the surface, and raking and stirring the ground to bury it, or drawing drills, and sprinkling them therein, and covering them with the soil from the sides of the drills. *Weeding*, is the removing of weeds either by chopping them up with the hoe, or drawing them out by the hand; or any other means. *Clipping*, is the cutting of trees, hedges, and edgings with shears made for that purpose. *Pruning*, is the removal of branches, or portions of branches, from trees, shrubs, and plants, by means of the knife or the saw. These are operations constantly mentioned in gardening, and require to be understood by the amateur before he can successfully proceed; but it is very desirable to employ a gardener a little at first, to see how these things are managed; for one practical lesson is worth a good deal of reading, though we shall endeavour to be as plain as possible. Presuming that, independently of occasional frost, there will be open days enough for business, we proceed to direct, according to our own experience, the business to be done in an amateur's garden.

FLOWER GARDEN AND SHRUBBERY.

Tulips.—The most important duty is to keep frost from the beds; however slight the frost may be that reaches the bulb, or the green spike, that frost damages the bloom, and creates notches, indentations, splits, and discolouration on the petals. The usual mode of keeping them protected is by means of hoops or bent irons, with a net over them to keep off vermin, and water-proof cloth or mats to cover from the frost. This, however, in mild weather, should never be put on till the last thing at night, and should be off again by daylight, because they require all the light that can be safely given without danger of frost, and all the air likewise. The transparent water-proofed cloth would be better than any material that darkens them, and an hour's confinement extra every day would be of infinitely less consequence, if of any consequence at all. As, however, the spikes of green will be now appearing, it may be considered the most particular of all the months in the year as regards damage by frost.

Auriculas.—These, being in their winter habitations, must have all the air that can be given and but little water; so that they do not actually flag for want of moisture, the less they have the better. The frame or pit in which they are placed should be dry at the bottom, and impervious to wet, and so constructed that the water which is unavoidably given shall, when it runs through the pot, run off altogether. All dead leaves should be picked off and thrown out of the frame or pit; for nothing is more dangerous than damp, and that which arises from decaying leaves is worse than any other. Cleanliness in plants is as necessary as in animals; and nothing is more important than constantly sweeping out the refuse and dirt and vermin that accumulate in pits and frames.

Carnations and Piccotees require much the same treatment. They are equally tender, and easily injured by damp: frost does them no good, though they will stand a good deal of it. They should have as much air as possible, except when there is dampness in the atmosphere; on these occasions the lights should be only tilted, but if the air is dry, they should be taken altogether off.

Pansies in pots require the frame protection, or to be plunged, for the frost would penetrate the sides of the pot, and damage the ends of the fibres; this would check the plants very materially, and weaken their bloom.

Verbenas, Petunias, Fuchsias, and all other plants in pots, must be kept clean and not too moist. They should have air on all occasions when the weather is mild. The frames or houses in which they are kept should be well dried and swept, all falling leaves be taken away, and the vermin be constantly disturbed.

Stocks, Mignionette, cuttings of plants, in store pots, autumn-sown annuals, and all plants intended for bedding out in spring, must be well attended to, and the drainage of the pots frequently examined, for if that be stopped with soil in the holes, or by any other means, the plants will be sacrificed.

Double Anemones and Ranunculuses planted in autumn must be protected with litter of some kind, long straw or peas haulm, when the weather is frosty; and it frequently happens that this comes in the night without any previous indication, so that it is better to be prepared for it. Single Anemones, which remain undisturbed in the ground, will frequently bloom, at least partially, all through a mild winter. It is of great service to strew the beds with leaves, especially oak leaves, which do not look unsightly, and protect the plants while the bloom pushes through them, and looks well in the worst part of the season. The beds for the spring-planted Ranunculuses and Anemones which are intended to be in good order in June, should have all the mould or compost thrown out on each side in ridges, to be chopped about and turned over often during the present and part of next month; these ought to be one foot deep and well drained; indeed, it is all the better if the second foot, or bottom, were mixed with brick rubbish. If new beds are to be made in consequence of the present stuff being bad, the compost should be half loam from the top six inches of a meadow, and half thoroughly decomposed cow dung, which should be put together without delay, and be frequently turned over.

Dahlias should be examined, if they are kept in a dry state, and can be got at, and any that are required to be much propagated, should be set to work towards the end of the month, by potting the root, with the collar or crown of the tuber just above the soil. If any are found to be rotting, cut out the damaged part close and clean, and if the plant be at all in danger, pot it, and set to work as soon as possible, that you may obtain cuttings. It frequently happens that a cutting will push and may be saved, and the plant or tuber die altogether before it can throw out any more. A common hot-bed may be made up with some stable dung as directed in the kitchen garden, and the pots, with the tubers in, can be placed in it at once. When any of them have shot out two or three inches, the cuttings should be taken off just below the lower joint, the two bottom leaves be cut off, and the cutting placed in a small sixty-sized pot, close to the side of the pot, and be put into the same hot-bed, then it will strike in the course of two or three weeks, and make handsome early plants. The general collection of Dahlias must not be propagated yet, as it would be very inconvenient to keep them all, and they would be too forward.

Flowering Trees and Shrubs.—The planting of these may be proceeded with every month from September to March, but the earlier the better; nevertheless there is no real disadvantage in planting this month and next, except for those which bloom remarkably early. The plants in the shrubbery may be trimmed up into form, where they have grown straggling; and if any have become too ragged and bare at the lower part to look well, you may plant something bushy before them; or if you can select any good upright stem that would form a good standard, you may cut the rest of the plant away. In planting shrubs and trees, be careful in the taking up; save every fibre, but be not anxious to bring away large balls of earth; plants that come out of peat mould, as Americans, and some others, are exceptions; here the larger the ball the better; for they may live for years without the roots getting beyond it. Make your holes large enough to spread ordinary roots out all round the tree or shrub; loosen the bottom, and see that the earth you throw in again is moderately dry or crumbling, that it may get between all the roots and make a solid bearing for the tree. When the hole is filled up, tread it well down all round, that the tree may be firmly fixed, and, if necessary, place stakes sloping towards it from three or four sides, to meet in the middle, so that by bandaging them with a hayband, the wind cannot disturb it. This precaution is only necessary when the tree is large enough to be operated upon by wind; all ordinary shrubs, of moderate growth, will do without stakes.

Turf and Lawns generally.—Turfs will lay down in good weather as well this month as any other, and is one of the most beautiful features in a well kept and well laid out garden. These turfs are cut in three feet lengths, one foot wide, and before they are laid down, the ground should be levelled, or made very even on the surface, and well rolled, that it may be solid; the turfs should be cut all of a thickness, and the work is easy. They must be laid very close to each other; they are unrolled and laid side by side, each row being pushed close with the back of a rake; and when done, they should be beaten down well, and rolled with a heavy roller. Should the weather prove dry, they should be well soaked with water, and rolled again. A lawn as even as a carpet may be made in a day; and as green and smooth as if it had been made for years before it has been down as many weeks.

Herbaceous Plants, Biennials, &c., may be planted in the beds and borders; though they had better be put out earlier, yet there may be no ill effects result if they are planted carefully.

Alterations of all kinds may be made where it is desirable, new beds, borders, and clumps may be formed, and box edgings may be made. These things require mild, open, dry weather; for the least attempt to work in a garden when the ground is wet, is unwise; it closes the earth to trample on it; no plant can be made secure in the planting; everything is uncomfortable, and no operation can succeed properly. It is essential to clean work that the ground work easily; and nine times out of ten the time spent in a garden under unfavourable circumstances is time lost, and not unfrequently plants and shrubs are damaged also.

Bulbous Roots of all kinds should be in the ground or potted long before this; but if any are left out of ground they must be disposed of directly one way or the other, or they will perish, if they are not spoiled already.

Manure may be laid on the ground where it is to be used, and may be dug or trenched in wherever the soil is in working condition.

All vacant spaces should be dug and left in ridges, especially ground intended for Dahlias, and for the usual bedding out plants. Protection should be given to half-hardy and tender plants generally.

HOT-HOUSE, OR WARM PITS FOR FORCING FLOWERS.

Plants and flowers which have been forced some time, are coming into flower, and must be well watered: a further supply, to succeed them, should be put into the coolest part. Rhododendrons, Azalias, Roses, Rhodoras, Daphnes, Persian and Siberian Lilacs, Gilder Roses, bulbs of all sorts, should be kept in frames some time before being placed in the hot-house or warm pit at all. Plenty of air should be admitted, especially in fine weather.

Plants in general must be kept clean, and have plenty of water while growing. Stop the ends of all random shoots, to keep them short and bushy. Train up climbers as they grow, and not let them hang about; for the leaves will be found twisted in all directions but the right. Give new pots, rather larger, to all plants that have filled their own with roots. Water should be kept in the house for the purpose of supplying plants, which would be damaged by any colder than the atmosphere of the house. Any plants that are foul with insects should be washed with soap and warm water, or with warm tobacco water, and well syringed with warm water afterwards.

GREEN-HOUSE.

Here there cannot be too much air in dry weather if there be no frost, and it is better to avoid putting fires if it can be possibly done without. Very little water should be given to any of the plants; but care must be taken that the hard-wooded plants do not get dry, for it would be fatal. Keep everything dry and clean. In very damp weather a good fire should be made, and the house opened a little at top, to dry it. This, however, must be done in the middle of the day.

KITCHEN GARDEN.

Hot-Beds.—To make a hot-bed with stable dung, it is necessary to prepare it by laying it in a heap to heat, and in a few days to fork the whole of it over, shaking it out well into another heap; and if there is any indication of dryness, to water it two or three times during the operation: in a fortnight or three weeks it will be ready. Then lay your frame on the ground, to mark out the space you require, and drive in four stakes at the corners, so as to allow a foot width of dung all round the frame; remove the frame now until the dung-bed is formed. The dung must be laid evenly over the ground, within the stakes, and piled up in a square or oblong square, level at the top, the dung being well shaken out, and patted down with the fork as you go on, that it may lie light, but equally pressed all over; three feet, or three feet six inches high, will be sufficient. When it is completed, and neatly squared on the sides, and levelled on the top, place the frame on it, and the glass on the frame. Thrust a long stick into the side, to reach the middle of the dung, for the purpose of pulling out occasionally, and feeling it to try the heat. In a day or two, add about three inches of good loam, or, in the absence of fresh loam, the best garden mould, taken from where vegetables grow well. But no earth can be made up so good as turf, cut four inches thick, and placed in a heap one year to rot. This is, without exception, the best soil for anything. If it is too stiff, which is rarely indeed the case, road sand is the best thing to lighten it with; and it should be only given in sufficient quantity to let water pass freely through the soil. By tilting up the glass a little, and letting the rank steam off, the bed will be fit for the reception of plants. Seeds of all descriptions may be sown in pots, and placed in the frame. If it be for the growth of cucumbers, place a heap, or cone, of similar soil to that which covers the dung—say as much as a stable-pail would hold, under each light. This is formed into a hollow in the middle, and a sort of circular heap round it; into this basin the cucumber plants are turned out of their pots with the balls of earth whole.

Lining Hot-Beds.—The way to line a bed is to fork away the dung from the front, and fairly undermine the bed, drawing out the dung, and then place hot dung in the hollow thus made, pressing it down and in, and heaping it up level with the other part, and a foot wide at top. In a few days, serve the back of the bed in the same way, and when the heat declines a little, the two sides, or ends, may be heated by the same means, and when the heat declines again, repeat the same process.

Asparagus Beds, which are made up for the winter, require but little notice; but the forcing of this beautiful vegetable is so simple, that those who like it should never be without a supply. Three-year-old roots should be preserved; or, if you have old beds to break up, select the strongest roots from them. These are to be laid as close as they can well be placed on the loam of the hot-bed, made as directed, and covered up with three inches of good loam above the crowns. The bed is to be covered with the glass, and air given to let off the steam and excess of heat. Some persons who are fond of a long length of white uneatable stuff and a nob of eatable vegetable, will, in three weeks' time, put three inches more earth ; but we prefer cutting not more than an inch of white, and three or four inches of eatable asparagus, and therefore put no more earth, but allow them to grow three or four inches out of the ground, cutting them before the buds begin to open ; but this will not do for market, because people expect a large quantity for money. This bed will keep in cut for a table a considerable time.

Beans may be planted, or rather sown, in rows, two feet apart, and three or four inches apart in the row. The best method of sowing, is to draw drills, about two or three inches deep, and after placing the beans in the bottom, to draw down some of the earth upon them, to cover them nearly an inch.

Plants for seeding.—Towards the end of the month plant out Beet, Cabbages or Savoys, Carrots, Parsnips, and Onions, for seed. Select handsome specimens of each. Any one or more of these subjects may be desirable, but only in case of their being very handsome specimens, from which seed is wanted. In small gardens, nothing but the desirableness of the sort can make it worth attention; for a very small bit of seed will be enough for a moderate garden.

Cabbages.—Plant out for cabbaging, a foot or eighteen inches apart. Sow seed in a warm, sheltered spot.

Carrots.—Sow a few for an early crop.

Cauliflowers, in frames, or otherwise protected, should be kept clear of dead leaves, have air every opportunity, and be refreshed with water but seldom. Give air to those under hand-glasses as often as the weather will permit, but keep the glasses down close in frosty weather. Sow some seed in a frame, or under hand-glasses, that they may be protected.

Spinach.—Keep clear from weeds, and pick the well-grown leaves only for use. Sow, also, some more in drills, or broad cast, that is, sprinkled evenly over the surface of a fresh-dug compartment, after levelling, and rake it in until covered properly.

Salading, of all kinds, may be sown, including the hardy sorts of Lettuce, either in frames, or in warm situations, to be covered with litter, or hand-glasses.

Peas.—Sow a row or two at the beginning and at the end of the month; earth up those which are above ground, on the shady side, especially that the ridge may protect them from cold winds.

Parsley.—Sow, it will make a good edging to shady borders, while the sunny ones are better for strawberries. Throw litter over any that is in good order for use, whenever there is any indication of a frost.

Onions.—Sow a few in rich ground; clear any of the autumn-sown ones; thin them, by drawing them small for present use, rather than waste them by hoeing them out; weeds must, of course, be taken away by hand, or otherwise.

Mint, and other herbs, which die down to the ground, should be potted, in small quantities, to be placed in hot-beds to force, when they are likely to be required for use.

Rhubarb may be covered with boxes, or pots, and be surrounded with hot stable dung, to force.

Sea Kale, also, may be covered in a similar way, to produce early shoots.

Mushroom beds, if not made before, may be made now, but should have been made in September. Procure a quantity of short stable dung; the horse-droppings alone is the best. Let this be laid in a heap, in any form, so that the sides are sloping; either a single cone, a bank of any length, or a sloping bank against a wall; when this has a gentle heat, place lumps of spawn, about the size of hen's eggs, about six inches apart, all over this cone, or bank, from bottom to top, tucking them in just below the surface; then cover the whole with about an inch and a half of soil, in a moderately dry pulverized state. This must be covered with straw to protect it from the wet; if, however, it can be made under cover, it is better. The bottom of a green-house, or stove, is good, and will forward them; but it will do in a dry cellar, and even may be done successfully, on a small scale, on a broad shelf, and as well in the dark as the light. Lumps of spawn may be put all over a declining hot-bed, or in pots, full of horse-droppings, with a little earth over it. See that the straw covering of beds already in bearing are dry, and if not, remove the wet, and put new dry in its place.

Cleanliness in the paths and beds must be attended to, and **dung** should be removed and spread in frosty weather, ready to dig or trench into the ground.

THE FRUIT GARDEN AND ORCHARD.

Trees of all kinds may be planted in open, favourable weather, if the ground be dry enough to work well. If the soil be good, and moderately deep, there will be no occasion to dung it. Plant the roots high in the ground; the collars of the root should be fairly above the ground; deep planting is often fatal, but always injurious. Dig the hole large enough to spread the roots well, and loosen the bottom by digging it; see that the earth is crumbled well among the roots, and when covered up, well trodden down, and staked to prevent the wind from disturbing them.

Gooseberries and Currants.—These may be planted in quarters by themselves, or in a row across a garden; it is a bad plan to have them straggling about a garden without order or regularity, or round the beds, or along the edges next the paths; they should be planted in rows, with only good room to go between them to gather the fruit, say four feet by three as the smallest distance that can be made do; where ground is no object, five by four is better. It is easy to get a row or two of cabbage plants between them in autumn to pull as coleworts before the fruit comes. They should be pruned also this month.

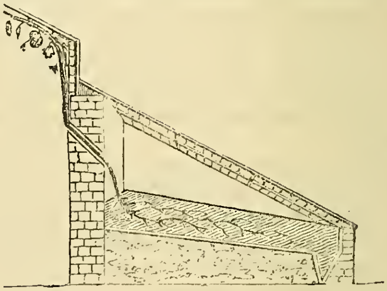
Raspberry Canes should also be planted in rows, four feet by three, or thereabouts; and where they are already planted, dig between them, and, if not done before, reduce the number of canes to three or four each plant by cutting away the weakest; shorten the others to four feet, and tie the tops together. Some people stake each plant, but it ought not to be necessary; for the canes support one another.

Espallier fruit trees should be pruned and fastened where they are loose; all the branches which grow outwards from the trellis, and will not range well on it, should be cut away; branches in the way of each other should be, one or other, cut away; generally, the weakest should be removed, and the other branches should be neatly trained to the trellis.

Wall Fruit Trees should be pruned and trained before this, but if not yet done, must be done directly. If there be a frost hard enough for the purpose, either now or next month, the syringing of a wall with a fine rose until it is all covered with ice, is one of the most effectual means of destroying the pests which harbour in all the crevices; for they are frozen up in solid ice, which does not injure the trees, while it makes clean work of all animal life. These opportunities do not often occur, but should never be lost where there are snails, earwigs, slugs, or other vermin in any quantity. This has been recommended in a recent work, and found since to be effective.

Pruning generally, among standards as well as wall trees, should be done, if not already performed. There are but few standard trees which may not be improved by removing the worst of two branches that are in each other's way, and cutting away all the weak inner shoots which choke up the tree. Sun and air are essential to the swelling and ripening of fruit; and where the heads of trees are allowed to grow into a complete thicket, as in nineteen cases out of twenty they really are, the fruit comes smaller and worse flavoured. This is nevertheless the case with many orchards; not a tree in a dozen will bear fruit half as good as it ought to be grown, and from no other cause than neglect in the pruning departments. The same kind of management that is awarded to the wall fruit should, in a general way, be observed towards standard trees, all except the taking away of foreright shoots, which are useless on wall trees, but are not to be distinguished in standards, inasmuch as it matters not which way a branch grows, so it be not in the way of other branches; but few trees of any age at all are without a quantity of small brushwood, which requires to be all cleared away before any real good can be done.

General Remarks. — Many gardeners wash the barks of trees with brine, or lotion of some kind, to clear, as it is alleged, the vermin from them. We are great advocates for cleanliness, and think there is great virtue in clear water, projected with force from a garden engine; and were this operation more general on wall trees, espalliers, and standards, they would all be the better for it. Much has been said and written about the impropriety of disturbing the earth under fruit trees; but the practice of the best market gardeners, and the result of it, is so opposed to the notion, and our own experience has proved so completely that air is acceptable to roots, that we do not hesitate to dig beneath the trees, and to recommend all others to do so. Under crops may be the worse for the trees, but we do not believe the trees can well be the worse for the under crops; for the dressing of them is every way favourable to the roots beneath them, while the occasional damage to the roots of trees is only so much root pruning, which, unless carried to excess, is always beneficial.



CULTURE OF THE GRAPE VINE UNDER GLASS.

"Science with practice" is the motto adopted by the Royal Agricultural Society of England, and science with practice is an equally appropriate motto for those who devote their services to horticulture. We may be slow to recommend new systems, and we may think lightly of theories that are not based upon practical experience, but we are not the less ready to adopt real improvements in any and every branch of horticulture. If our readers should fancy that we are too much in favour of old and tried systems, we must be excused for reminding them that in Grape growing nothing has yet been accomplished with the new systems that has not been better done by the old and tried ones; and while theorists have been speculating upon new plans, the old-fashioned growers have been producing finer fruits than have been grown by any of the numerous cultivators on what are called new and scientific principles. Men who have recently tried these new systems may speak of their achievements of one or two years, and they may have done more in that space of time than any of their predecessors; but the fate of their vines at the end of such a period as the specimen at Hampton Court has stood, we have yet to learn. We may safely conclude, however, they will not be better; and hundreds of vines planted upon the old and well-tried principles, are now, under proper treatment, producing fruit which may be advantageously compared with anything produced by modern writers, or the best of their disciples.

We deny the propriety of imitating nature in the culture of the vine, and we condemn altogether the idea of reconciling our practice to the natural habits of the plant, except, indeed, we can be satisfied with such productions as are yielded in their natural state.

This may appear rather a bold step; but let us ask the observers of fruit, whether the bunches of grapes produced along the banks of the Rhine, or in the south of France, or in Syria, or in Alexandria, would satisfy the judges at one of our English horticultural exhibitions? Whether the muscat of Alexandria is ever found in its own country, or in any other country, equal to the specimens which have been seen on our nobilities' tables, or, indeed, in Covent-garden Market? Why, then, should we attempt to found our practice upon the growth of plants where they are not grown well enough for our purpose? As well might we attempt to found a system of cultivating celery upon the habits of the wild plant, or to produce fine apples by conforming in its culture to the natural habits of the crab; but in either case we might look in vain for the specimens now produced under artificial management.

We are not disputing generally the propriety of adapting the culture of some subjects to their natural habits; we are merely insisting that all our highly cultivated *plants* are produced by means very different from the natural habits of the *plant*, and that while not a country in the world produces grapes naturally, so good as we can grow them by artificial means, it is useless to attempt a system of cultivating them in this country, founded on the natural habits of the vine where it is indigenous, but where its fruit is by no means equal to even the ordinary hot-house grapes in any well kept up establishment.

The question whether vines should be planted inside or outside a house, to grow the fruit to perfection, has been repeatedly discussed without the subject being any more at rest than it was many years ago; we have often heard of the fruit shanking off, instead of ripening, of its shrivelling, instead of swelling; and perhaps no unfavourable result was ever more talked about, and written about, that was ascribed to so many different causes. That the evil may be traced to the root, we have little or no doubt; for while the fruit is growing under a considerable increase of temperature inside, the roots are too often receiving the cold drizzling showers outside, by which their temperature is lowered very considerably, and in no case do we know of a plant doing well under such circumstances: all checks of this kind must be injurious, and check the fruit. On the other hand, when the vine is planted inside, the sun cannot possibly reach the roots; and it is very generally admitted that the rays of the sun are highly beneficial. To steer clear of both these evils, we would adopt a plan by which all the benefits of the sun should be secured, while there should be ample protection against cold wind and rain at all times: this is merely to cover the border with glass in such way that the full rays of the sun can fall on the surface, either through the glass, or by uncovering it altogether, while the sun shines, and by covering all up when it is going off, by which means almost every temperature may be maintained; indeed, where necessary, it could be kept up to nearly the temperature of the house, by opening a communication with it, and no more moisture need be given than the roots require. This is an improvement upon the out-of-door planting, without any of the evils usually attendant upon the opposite course. The plan of the house in which the vine is to grow, or, in other words, the vinery, is, and must be, dependent upon the other uses, if any, to which the house is to be put. The market-gardeners usually grow pines and grapes in the same house; and Mr. Wilmot's establishment at Isleworth exhibits this plan carried out to a great extent, as well as under several different plans of heating. Here may be seen the vine borders, made up with the richest soil, exposed to the full sun and air, and without any glass covering to keep off moisture; and here, too, may be found, in their proper seasons, both these choice fruits in perfection of growth, colour, and flavour. Not that market-gardeners are, generally speaking, anxious to grow fruit beyond the average; on the contrary, their object is to bring crops as heavy as the vine can carry, and bring all things quickly to market; but they can ill afford to risk a failure by any mistake in the management, or any silly experiment, so that their practice is for the most part sound, and those who want to improve upon it, have only to lessen the crops, and thin the branches: this will increase the size of the berries, and do as much pretty nearly as can be accomplished by more expensive means. But it may be said that market-gardeners differ in their practice, and bring fruit, nevertheless, very nearly to the same standard; this only proves, that provided one or two principal conditions are attended to, the vine will flourish under many different modes of treatment. It becomes chiefly necessary to set out with these leading conditions, properly secured, without reference to the detail, and then to mention the various methods adopted for after treatment, which must depend a little upon the circumstances attending the place in which they are to be grown.

Much has been said and written of late about the soil in which the vine flourishes most, and we are gravely told that the commonly received notion that it requires rich compost is erroneous—that it will grow best in brick rubbish. It must be obvious to all who have noticed the vine growers of this country, that the commonly received notion has been acted upon for centuries, where a finer produce than ordinary has been required, and that the more fashionable or more modern notions cannot have been proved much. How far these starving plans may be successful in producing certain results, we are not prepared to say; but the most perfect fruit we ever saw, or even hope to see, were grown according to the commonly received notions, that the vine is a coarse feeder, and can hardly be grown or cultivated in ground too rich in animal and vegetable manure. It must not, however, be denied that rich soil is not the only condition required; that where some others have been neglected, failure has been the result; and there is one point which, if lost sight of, leads to the worst result, the want of proper drainage; and many a good old vine, in a good old house, and that has done good service, has at length gone off so much that the fruit would not ripen, but on the contrary has become small, or has shrivelled or shanked off before it came to maturity. The borders have been dug, the soil removed in a sour unwholesome state, the roots found half rotted, and all manner of mischief has been discovered; a drainage has been provided, a sound bottom made, the roots pruned, and eighteen inches of rich soil placed among them to form a new border; the vine cut in to compensate for the loss of roots, and the vinery completely restored in two seasons: while other vines, old beyond the means of tracing the age, continue to this day, bearing fruit in perfection, although the only thing done to the borders in the memory of man, has been to supply them with quantities of the richest manure, animal and vegetable.

TO RAISE VINES FROM EYES.

There is very little difficulty about the raising of vines from eyes. If they were cut with half an inch of the stem on each side, and were planted on the open ground in rich soil like scarlet beans, we verily believe they would grow and do well; but the object of all cultivators is despatch. It is not enough to find a well-rooted vine plant with a foot or two of stem at the end of a season, when by using other means they can be grown many times as strong. The preparation of the eyes consists merely of choosing full plump ones, in well ripened wood, and cutting the wood up pretty close to each side of them; these may be placed in what are called large sixty-sized pots, of tolerably rich loam and decayed dung, well mixed and laid together for a time. These may be plunged in a moderate hot-bed, and grown fast; air and water must be given at proper seasons, and as soon as the pots are filled with roots, the plants may be removed to forty-eight-sized pots without disturbing the balls of earth. There must be some crocks, or broken pieces of pot, put at the bottom to secure a drainage; and soil of the same description as that used at first is to be put round the ball of earth, and gently pressed down without bruising the fibres; these should be placed in the stove, if there be one, and must not want water, as if they were once too dry it would check them. If the eyes are put in during the latter months of the year, they will have made some progress by the spring; and by the time the second pots are filled with roots, the plants may be transferred to twenty-sized pots, in the same way they were put from the sixtys to the forty-eights: and after they have been in the house a few days, during which time they should be supported against the wall, or tied loosely to a trellis or some other place, that they may not be broken or bruised by their own weight, they will be ready for final removal for the season, which, however, should not be till the end of June, when the pots may be sunk close together, under a south wall, and the vines tacked loosely up the wall; and there they may be watched and watered when they require it, until the leaves turn colour, soon after which they will drop, (all this time side shoots must be stopped at the first joint,) and the wood will thoroughly ripen. Some cut these down and grow them another season, even if intended to plant out in a border; others use the first year's cane to carry through into the house; but here we have, at all events, plants fit to do anything with, raised from eyes in one season; and whether these be required for growing and fruiting in pots, or for planting on a border, to be carried through into a house to grow under glass, or to be planted inside a house, they are equally fit for their work. Many prefer raising plants from cuttings or layers, and although we do not think them equal in general to those raised from eyes, many very excellent plants, perhaps not inferior at all, have been, and many others are, constantly, raised from both cuttings and layers.

TO RAISE PLANTS FROM CUTTINGS.

Select for cuttings well-ripened wood, with the buds not far removed from each other; this is called short jointed. Cut them into lengths with only two eyes, one at the top and one at the bottom, the wood cut pretty close to the joints, but especially the bottom one. These may be placed in forty-eight-sized pots, close down upon the crocks which form the drainage, and the pots filled with the kind of compost already mentioned: the upper joint will be just above the soil. These may be placed in the hot-bed, as recommended for the eyes, though they are frequently placed close to each other, in about a foot of soil on the dung bed, and afterwards planted in pots. Our objection to this is, that the roots get damaged by removal at a period when they are brittle and tender, yet, if the cutting can be planted where it is to grow, and may remain undisturbed, we should give the preference to a cutting; but we should have the cutting with three eyes instead of two, and have two eyes under ground and one just above. In this case, the cutting would not have to be disturbed at all if it struck well, which is all but a certainty, nevertheless, when you plant cuttings to grow where they are planted, plant two for each place, that you may have the choice of the stronger. Our business, however, at present is with plants to be raised for removal; and here it is better, if not absolutely necessary, to have them raised singly in pots, that they may be shifted as they grow, until at length we have them under the south wall, regularly trained upright, and the side shoots pinched off at their first joints, to throw the entire strength into the main stem, which—like those from single eyes—may be frequently grown from six to ten feet in length in the first season. The difference is chiefly in the cutting requiring a larger pot to commence with; but it will require but two-sized pots instead of three, for the pots they should be perfected in, the first season, may be size twenty-four, the same as the single eyes. In raising a number of vines for a house, or indeed for any purpose, many more should be raised than are wanted, if the means can be had, because those which have made the strongest and ripest wood are to be preferred, and some will always be found stronger than others.

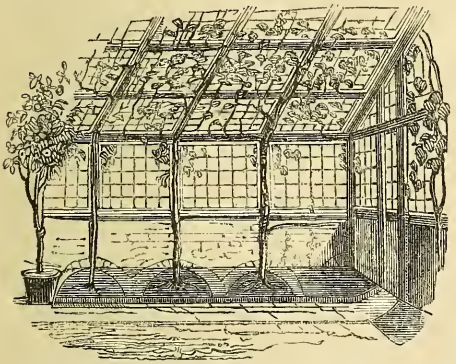
RAISING VINES FROM LAYERS.

In this case the new plant is made perfect before it is cut from the parent vine. The branch to be selected should be strong, ripe, and spring from some part pretty low down the vine, that it may be easily bent down under the ground not far from its base, because the thicker the wood the better; it should, however, be not too vigorous, for the very rapidly growing branches have frequently much longer joints, that is to say, the buds farther apart; whereas, all wood for propagation should be chosen with short joints, full-swelling buds, as being the most fruitful. One of these being selected, it must be brought down to the ground and pegged fast below the surface, and not more than two eyes be left above ground, one close to the soil, the other just above it, so that when the part that will go beneath the surface is ascertained, all above the length required to be above ground must be cut away. This should be as soon as the leaf falls, and whichever of the two buds above ground grows the stronger should be selected for growth; the other should be stopped or pinched off at the first joint. The mode of fastening these layers down is by a stick with a hook to it, thrust into the ground so as to hold the layer on the plant or lower side of an eye; and the more sudden the bend is at the place where it is held, the better it will be for the intended new plant. This will be perfectly rooted in a year, or by the next fall of the leaf. Many give the layer a sharp twist at the place where it is to be pegged down; others cut a notch half through the layer, which is supposed to facilitate the striking; but a sharp bend just behind the eye pegged down will be generally sufficient to insure healthy striking and proper growth: in fact, if a branch were merely laid along the ground, and a few heavy stones laid along it, the branch would strike at every joint.

FORMATION OF THE BORDER.

Presuming that we have plants raised from eyes, cuttings, or layers to plant out for our purpose, or that we are going to use cuttings for the plants themselves to root where they are to remain, we must first see to the formation of the border, or space wherein the roots are to grow; supposing it to be the front of a house in which the vines are themselves to be trained, let every thing be cleared away for two feet six inches below the part you intend to be the surface of your border, and let a drain be made that shall carry off all water as low as that. This point must be managed somehow, for the vine must not be subject to watery visitations from below; and this cannot be avoided except by efficacious drainage under, and a perfect outlet at all times and seasons. For if there happen to be any rise of water where the drains are let off, so as to stop up the mouths of the drains, they might as well be away altogether. The width of the border must in general depend on your convenience and room: it ought to be as wide as the vine is to be high, somewhere between twelve and twenty-four feet, eighteen being a fair average for a good house. The next object after securing an unquestionable drainage, is to lay on a concrete bottom, as it were, of brick rubbish and lime core, beaten hard, laid even and smooth, with a fall towards the outer front, where an open drain must be maintained as high as the concrete; a dwarf wall should be constructed along the front, just as high as the earth, for the border is to be kept in; it is good that the roots be confined to the border. This concrete should leave about eighteen inches for compost next the house; it should slope enough towards the front for all water to fairly run down to the drain. And now for the compost in which the vine is to grow; and we admit "doctors will differ;" writers and practitioners, to some extent, may declare that each of their several recipes for the preparation of vine borders is right or is the best, and perhaps the result of their experience may have justified their assertions to some extent. Having been in the habit of visiting vines, and observing the different mediums in which they flourished, we must say they would almost justify any notion that has been put forward respecting what the roots of a vine likes. We have seen a vine growing in plain loam, without any preparation whatever; the very ground the house was built on trenched two spits, and the bottom loosened, and then, without a morsel of dung, consigned to its fate; and few vines equalled it in health, strength, and fruit, and it was the same at the end of twenty years. But all the rest of the advantages were natural; it was the south side of a hill, where the declivity as it approached the bottom was very slight, and the drainage was unexceptionable, the loam rich; it might have done even better with a few bones, or we will not say that liquid manure, at critical periods, might not have swelled the berries a trifle larger; but being, without any trouble, as large as we ever saw any, we presume there was no desire for experiment. The roots in this case ran just where they pleased. We have seen other vines flourishing on a chalk hill, at least by the side of it, without even the benefit of a prepared border; but the cottagers had not forgotten an old and vulgar prejudice about burying dead vermin round the roots of a vine, so that it had abundance of flesh and bones to feed on; and there could be seen, on disturbing the surface at one of these graves, abundance of root and fibre firmly adhering to bones, which was all that remained; and this might be mentioned as a more than usually vigorous vine, and kept in above average good order. But amongst scientific growers we have seen vine borders made of the top six-inch spit of a pasture, including the turf, thrown together without even chopping them small: not a bone nor a spit of dung, nor any other matter was placed there but these turfs, for they were little better than turfs; and here vines grew well for years. But having to grow vines where there are no local advantages, and where you have got to insure success under any circumstances, it is no use to speculate on a thing doing well at Blackwater because it did well at Brentwood; let us then say, generally, that the vine fails not to flourish in the loam from the surface of a pasture with the turf on it; that if you could mix with it about one-fifth of the whole of good rotten dung, it would do better; brick rubbish, so that it do not exceed a tenth of the whole, and bones broken into large pieces, but not bruised, about the the same quantity, better still. No compost could beat it. To bring it to quantities better understood, say eight barrows of pasture loam, two of rotten dung, one of brick rubbish, and one of bones; but it is essential the bones be in good sized pieces, and not be bruised, as they will hold their properties till the vines want it. A compost like this would grow a grape, under proper management, as large as it can be grown, and this stuff may be laid on, well mixed, eighteen inches thick at the back, and twelve in the front, gradually falling as it comes to the front, and filling up the space to the dwarf wall. It has been objected, that in forcing grapes there will often come a wet, cold, sunless season, chilling the root outside; and this seems to be the only even moderately sound argument in favour of planting inside. We propose, however, to get over the difficulty in a much safer and far more natural way; we would cover the border with glass; none of the genial heat of the sun need be kept from the surface, this would be rather strengthened than otherwise by the glass; the cold chilling rains would be kept off, and if water were necessary it could be administered the temperature of the house: not only so, but holes to be covered or uncovered as would best suit the case, might be made, by which the temperature of the front glasses in bad weather might be made the same as that of the house itself; but as, compared with planting inside, it is very superior, the roots will grow their natural way, outwards, and fill the border. When planted inside, they have heat it is true, and partial light reaches the surface; but where is the sun-light? the vines on the roof check that, if the building of the house does not. However, it is not our business to quarrel with other people's way of doing things, but to give our own, and, where we think it is.

required, our reasons for preferring it. With our border ready then, prepared as we have mentioned, we select the proper number of vines with the strongest canes, for that indicates the real health and strength of a plant; and turning it out of its pot, we lay the ball of earth on its side, sufficiently deep to level the bed as it was at first, and yet cover the ball, as there is no great harm if a little stuff were heaped over it, to prevent exposure of the fibres. We have now to make up our mind whether to take the present cane through the hole into the house, and cut back to the last two eyes inside; to grow it directly, or cut it right back to the ground, and have another year's cane, which would of course be stronger. We should, if the canes were strong, use them to lead into the house, and cut back to the two eyes just within to grow from; but it must be seen that there is no violence used in bending them to their places, and ample room must be left in a sufficiently sloping position. There is, however, a way of planting inside usually adopted by those who want the trunk of the vine where its branches are: this is done by building arches just under the surface along the front wall; by planting in the centre of these arches close to the wall, the trunk is kept under, while the roots will grow out, because there is nothing to stop them. The only good obtained by this, is, that the trunk is not bent to get it from the outside to the in; but holes in front walls for passing vines in, ought to be made differently to those in the older houses. This plan of building arches is only tempting where there is no glass over the border itself, and where, if the way be clear, the trunk will be as much protected as it ought to be under any circumstances.



Having now seen the vine planted and cut back to two eyes inside the house, we should, after a few days' growth, select the better of the two for our next year's cane, and let it grow as hard as it would, fastening it along the rafter or wire trellis, or to whatever other contrivance was prepared for it, as it lengthened, and pinching off any side shoots that made their appearance. If a bunch of fruit appeared in either of the breaks at first starting, it would determine us to choose the other; but if one appeared in both, we should remove the fruit as soon as we could get hold of it, from both, and select the stronger of the two for growth; for if we allowed it to bear so soon, it would throw back the vine two seasons. With tolerable growth, the cane will go pretty well the length of the rafters; and now we have to make up our mind as to the intended mode of training. If the house is to grow nothing but grapes, you prepare to cover the roof; but if to grow other subjects as well, one cane to a rafter is enough, and each year it is fruiting, there must be a fresh cane growing; but having found a good cane to fill the length of a rafter, it may be as well to adopt the spur system, keeping the cane for the main branch, and taking off close, from time to time, all weakly growing branches, merely leaving such number of them strong enough to bear, to grow for fruiting spurs next year: these being cut back to the last eye for another season, are sure to yield fruit. But the principal object to attain in the present day seems size of berry and handsomeness of branch: these can only be obtained by greatly limiting the number of both. Those who set about such things in good earnest, will, as soon as they show themselves, select the handsomest branches, and sacrifice half the others on the vine if they have any doubt of the capacity to do justice to all. As soon as the grapes are large enough (to get hold of with thin pointed scissors) we considerably thin their numbers, taking care to preserve those important to the bunch—as those on the shoulders and points. This must be done with great care, not only on account of the bloom being so easily destroyed, but also the grapes being so easily prevented from swelling by bruising the footstalk, which in that young state is done almost by bending any a little on one side. In a week afterwards they will be swelled enough to show which others are in the way, and to enable you to remove those least likely to help the bunch. These thinnings must take place a number of times, but the more of these requiring removal, that can be moved at the first thinning, the better for the remainder, as all the size attained by those which are ultimately cut off, is to the loss of those remaining on, and which might have shared it had the intruders been removed at first; nevertheless, it is desirable to avoid doing too much, for one grape lost, that ought to be retained, will spoil a bunch; and it is rather desirable to thin at several different times, that these important ones may be better seen. It must be recollected, that advantageous as the glass is to the roots in cold and wet weather, they will require the share of moisture of which they have been deprived. This, in cold weather, should be given fully as warm as the temperature of the house, and the whole border should have it; and according to the quantity which you have been obliged to keep from them, you must be guided as to what they should have given artificially. All houses should have tanks to receive the water from their own roofs; and this is generally found through the winter months more than an ample supply, as few things require it. Not so, however, the vine: as soon as it begins to swell its buds, it wants moisture, which we would not let it have naturally, and therefore must supply from the tank. It is needless to say these glasses over the roots of the vine are as moveable as those on a cucumber frame, and can be taken away half the width or all the width. We wish some of our friends who have a choice little house with muscat of Alexandria in, would, besides doing all they have done, let there be glass over the border, pay attention to the watering, where it does not get the weather, and, with the aid of the glass, and the other matters that the glass leads to, they may, perhaps, grow the grape a trifle larger, and a trifle earlier, and find it a trifle riper.

FORCING GRAPES.

You may grow grapes under glass either for the protection it affords to bring fruit forward without artificial heat of any consequence in due season, or to force it out of its natural season by means of artificial heat and very simple and straightforward are the operations in such cases. Whether you set your vines to work in November or March, or any of the intervening months, from the day you shut them up, keep the house the first week between 40 and 50, and next let the minimum heat be 50, and the maximum 55. Continue this temperature without alteration until they are in bloom, when you may raise to 60, and not exceeding 65, and the house must be closed. For although air may be given, through all the previous stages, if the heat; can be maintained with it, none must be given during the bloom, unless the sun happen to be very hot and raise the temperature too much. The glass over the roots will be found of the greatest advantage. The first thinning of the grapes, as soon as they are set, will be found a warm job, but it is a duty which must not be neglected twenty-four hours. After the grapes are well set, the temperature of the house must not be let down below 60, but during the sun heat it will matter but little if it rises to 90 or even 100 occasionally; these are the times to give air, which conduces greatly to their good, but must not be given on a risk of lowering the temperature too much. Sun heat rarely troubles the early forced houses, but there is sure to be plenty of it when the forcing is begun in February or March.

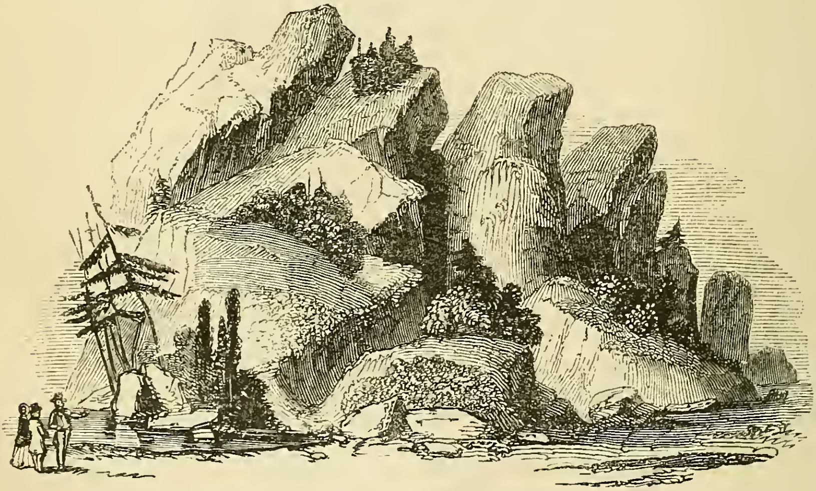
SORTS OF GRAPES.

With regard to the sorts of grapes best under glass there is great choice. The black Hamburg is by far the handsomest dark grape, and taking all its qualities, deserves the first place. It ripens pretty early, and is a fine grape. To follow this, Wilmot's black Hamburg is a late grape, and would hang till Christmas. It is quite as handsome as the former, and perhaps larger; fully as handsome in colour; but as it colours before it is nearly ripe, it is frequently marketed and tasted and condemned without deserving it. The skin is thicker than that of the Hamburg, but even this thins as it ripens, and we should say, that under the same treatment one would be cut far better in perfection pretty nearly two months later than the other. The white muscat of Alexandria, or the common wall muscat, whichever is easiest got hold of, is another important kind of grape to grow under glass. This requires more ripening than any other, and is, without exception, the finest grape in the world. The white muscadine, sweet-water, and Grizley Frontignan, are all fine grapes and good forcers, and should each find a place before many of the kinds which are now cultivated.

Experiments tried on a small scale cannot be relied on for general purposes; but we trust, even theorists, who have not tried it at all, will see enough in it to justify fair trials, where there are the means at hand. Forcing the vine at different seasons; growing the vine in pots; growing them in quantity for market, and various other purposes, will be treated as separate and distinct subjects; but those who have vines which do not bear in houses, should lose no time in digging up the border, clearing away bad stuff, and replenishing it with the stuff we have recommended well incorporated and pressed among the old roots after cutting away the decay.

THE APPLICATION OF MANURES.

It is no easy matter to induce a gardener to try experiments upon any great scale with the article of manure; for having all his life contrived to grow things well enough with the means at his disposal, he is unwilling to incur much responsibility by venturing upon changes which may or may not be efficacious. Manures in common use are stable dung, neat's dung, farm-yard dung, (which is a compound of all three, and decayed vegetables, and which is valuable at all times,) and leaves decayed into mould, and called leaf-mould. Where men have been all their lives successful in their culture, and more so than even good gardeners in their neighbourhood, it becomes them to be wary of any great alteration. There, experiments will certainly be tried upon a small scale if at all, and he would be silly that would risk his ordinary crops by depending on the success of some novel scheme. A sound gardener of some experience, in the metropolis of London, says, give him the refuse of a pair of coach horses, and frames enough to use his stable dung and litter, and he will grow any crops he requires quite as well as many others do with all the advantage of their tanks and flues and hot-water pipes. This, perhaps, is going to extremes; but certain it is that nothing yet has surpassed dung as a manure for all garden crops; all that can be hoped for is a substitute, and until the dung is scarce, no gardener will be anxious to try other things. The most important of all points to be attended to in a garden, is that of saving every atom of vegetable that can be scraped together. The leaves from the crops should be trimmed off and retained, the haulm of peas, the stalks of beans, the mowings of the lawn, the cuttings and prunings from the trees and shrubs, all of which in hundreds of establishments are thrown out to be carried away by the poor or devoured by stray pigs, should be as carefully preserved, to be returned to the ground, as if they were the richest manure. In some instances this refuse may be dug into the ground at once in its green state, in others it may be thrown into a proper hole to decompose, and the decomposition assisted by means of other proper applications, which, however, depends on the soil it is to dress. The objection made by some to digging in the green refuse in its first state has been chiefly the liability to nourish instead of destroy the various eggs of the pests which infest them, but where it is usual to throw all the refuse in a heap to rot, a good deal of this is destroyed by the heat and wet. The refuse of a garden has been undervalued, or rather not valued at all, up to a very recent period; for even outside market-gardens in the vicinity of London, there have been seen large quantities of cabbage and brocoli leaves, and vegetable waste of all kinds, thrown there to be taken by any one who cared for it, and removed by cottagers for their pigs and cows, or perhaps for the very purpose to which the gardener ought to have applied it, the manuring of the ground. Self-manuring, as it has been called, has been of late the subject of experiment in many places within the last few years, and it has been written and talked of by many as if it were a novelty, though for our own parts we have been in the habit of using every description of waste, not only for the garden generally, but for the very place it has come from. Thus, potato haulm has been dug in where the potatoes came off; cabbage leaves, turnip tops, and carrot and parsnip tops have been dug in at the quarters on which the crops were grown; the cuttings of currant and goosebery trees have been chopped up by boys and dug in between the bushes; and strawberry clearings have been used between the rows of plants as the only dressing they had; while these matters rotted slowly they kept the ground open, and as they decomposed they enriched it. The practice of digging all the trimmings of strawberries is not common, as they lie a considerable time in the ground, but in the finest piece we ever saw it was always done, and that too in a celebrated market-gardener's ground at Deptford; still the practice has been limited, and even now there are those who talk about such things being too rank, and object altogether to it. But we have unquestionable evidence that in some places on the continent, where vines are cultivated, the leaves and clippings are carefully forked in about the roots as a dressing for the next year. We do not mean to infer that this dressing is sufficient in all cases, because the bulk which goes away in the crop has always had something from the soil; though we deny that it has taken anything near the quantity of matter found in it, because we have mentioned, and have proved by experiment, that much of the contents of any crop, no matter what, is taken from the water and the atmosphere. But let us mention one application which has never failed us—the leaves of trees laid on pink beds, pansy beds, autumn planted ranunculuses, and other subjects which are the better for protection, so high as to merely show the tops, and at first aying on, hardly that, will almost rot by the spring, and if then forked into the ground carefullly without damaging the roots, will be found an excellent dressing; protecting all winter, and nourishing as they rot, they do not harbour the vermin so much as might be expected. And it is well known, that where leaves are allowed to rot into the mould, there is not a more efficacious dressing. But in these decompositions something must waste, and there can be no better way of preventing the waste than burying it while green; at least, such is the conclusion to which we came long since, and acted upon it; and some of the better description of market-gardeners now lay the dung on the ground smoking from the stables and dig it in hot, from a conviction that there is no way in which all its strength can be secured so effectually; and we observed this work going on at a garden in Kent, although there was at the same time from three to four hundred loads of dung from old melon and cucumber beds nearer to the ground in the course of dressing. The individual who was thus employed observing that there was so much stuff written about what would fix the ammonia, that it was quite sickening, "That," says he, "is my way of fixing it—I *put* it all where I want it, and I warrant me ten inches of loam on top will fix it where I want it, that is on the ground it is to dress." It is true that rank dung will not agree with many things, but when it is put at the bottom, things won't go any nearer to it than they like, but when it is turned up at the next season, the ground is fit for any thing. It is only the first season that some things do not get the benefit of it, but come to turn the ground over again to fix the next lot, the earth is richer by one-half than if the remains of old melon beds had been used; so it is with green crops ploughed or dug in, and with leaves and vegetable waste generally, instead of losing the strength which is wasting whenever you can smell a heap of rubbish, or a dung-bed, you have it all in the ground, and turn it up when you will, you have all the benefit of what would otherwise be going off in the atmosphere or soaking away in water. If, indeed, it be desirable to save rubbish and manures of different kinds, there is no way so rational as to put a layer of dung or of the rubbish, and a layer of the soil it is to be used on, alternately, and cover all with the soil; or if lime be a good dressing for the land it is for, the layers may be of lime instead of earth; and when it is applied, it will be found that the ammonia has been fixed, as it is called, and the whole heap is rich alike. This is commonly done near the coast with sea-weed, which forms, after decomposition, one of the best manures that can be applied to a majority of the farms in the vicinity of the ocean. These manures are put on as ordinary rotten dung is; that is, spread about the ground evenly, and either dug or ploughed in at the proper season. The chief modes then of applying manures are first in drills, as in the case of guano, bone dust, malt dust, and the various disinfected and prepared manures for that purpose; secondly, in top dressing, that is, throwing it by hand all over the surface, either after the crops are up or before sowing; thirdly, in a liquid state, by sprinkling all the ground with it by means of an engine or water-cart; and lastly, by the ordinary means already spoken of, that is, spreading it over the surface, and digging or ploughing it in. These all admit of various methods of carrying out the general principle, and will form the subjects of future papers.



ROCK GARDENS.

In forming rock-work in a garden, there should be something like a boldness of feature and provision for covering many parts with plants. It should not be frittered away in small compartments, as if it were a grotto; for that is anything but good. It should be a feature in the distance: the outline should be bold; the ledges for plants broad and flat, as well as containing fissures, into which the roots of plants may be introduced. It should, in fact, present an appearance of rock which at one time had been solid, and broken into fragments by time or storms. It is far better to see a large rock split into two, and not far asunder, than to make up a mass of small pieces as if they had been swept off a heap. Large plants among small pieces of stone look too artificial; if the rocky pieces be very large, the small plants look natural. The place to select for rock-work should be where there is an object in hiding something, or near a piece of ornamental water, where it should seem natural. The fault of most rock-work is, that it is done upon too small a scale, so as to present no feature till you come upon it; and then, instead of being like a rock, we have arches, and nooks, and points, like the ruins of some old miniature building, where even the Alpines look too large for their station. In other cases we have it like a cart-load of stones emptied in a heap, and then left. The rock-work on the island in the ornamental water of St. James's Park looks, for all the world, as if the commissioners of the pavement had borrowed the margin to lay their heaps of stone upon until they could appropriate them. It is no answer to tell us that stone cannot be procured so large; because, if a thing cannot be done properly, it should not be done at all; and, where they are built with clinkers, or the bricks that have been vitrified by over-heating in the stack, and run together in huge lumps, they might, in such case, as well be built in imitation of large rocks as small stones. It is the only fault in the rock-work at the Regent's Park gardens, the passes with the rocky sides and the rocky arches, that they are too small; and we should much rather have seen one solid mass in imitation of a rock fallen into three, or four, or more pieces, somewhere by the side of the lake, than all the little affectations of rock-work which are so ingeniously, and, if we could magnify them, we should say, so well-contrived. Our sketch is a hurried piece of business; rather to give an idea of the size, than anything else. This would not be so gigantic an affair as might be imagined, if on the sides of a mount or hill; and the conversion of one side of the mount in the Regent's Park into rock-work, after some such plan, would have given a splendid opportunity of growing even the largest rock-plants, and been a striking feature in the gardens; because, in constructing it, preparations could be made for the growth of any plant that would be picturesque, inasmuch as it would strike at once into deep soil in the mount itself. But whenever we have seen rock-work,—even with all the advantage of hill and dale,—where the height is already provided by the ground itself, small stones, instead of large masses, are plastered up the sides, and there is no distinct character. Now, on the masses we recommend, there would appear nothing out of character, if a tree of some importance were growing from them, while plants of any size, from trees downwards, would be completely subservient to the entire work. In forming these works, care must be taken that the earth is solid beneath, that the roots of all kinds of plants may have solid soil to grow in; for rain will wash away the earth if there be any hollow below to fill up; whereas, if it is all solid, there will be no material change, to the detriment of the vegetation upon and between the stones, or brick-work in imitation of stones. The above is only one of an infinite number that could be offered as instances of a kind of rock-work upon a large scale; but even here, for the sake of diversity, there is a departure from nature; for a geologist would say that such stones are not natural on the same spot. It is not, however, necessary to please geologists in the structure of rock-work; the million will be satisfied while the single scientific man may find something to quibble at; and, in structures of this kind, as well as in gardens, we are not to strive at imitating a barren rock, nor the plain rock with its one or two sorts of plants covering it; but we are bound to congregate as many natural beauties of rock-work into one spot, as we do the natural beauties of landscape into the space we are laying out: therefore, not only ought we to vary the description of rock-work, in figure and texture, but also bring together all the beautiful rock-plants of a hardy nature that can be found in all parts of the world, that the greatest possible diversity may be secured, and the best effect produced; so that, while parts are admired for their beauty, the whole will form a noble object.

PRUNING FOREST TREES.

We do not find in the vegetable kingdom any thing like a robust branchless tree. The oak, naturally, is on all sides a wide spreader; even the poplar, which shoots up to a great height, is clad from the bottom to the top with branchlets; so is every other tree; and it would appear that the office of those branchlets, or rather the leaves which they bear, is to elaborate the sap by exposing it to the light and air, and thus rendering it applicable to the wants of the tree. All men admit this; for perseverance in stripping a tree of its leaves will assuredly kill it. Excessive pruning, which is merely another mode of removing the leaves, often destroys the object operated upon; and every one must observe that such trees as are unmercifully *stumped*, more especially cherries, no longer give any symptoms of life, and immediately decay. The leaves which a tree bear, then, operate as intimately with the life-giving principle which supports it as the lungs in the human frame do with the air we breathe.

Is the removal of leaves therefore, under all circumstances, an evil? No; for by judicious pruning, great evils may be remedied. A tree which is forked, for instance, having two leading shoots contending for the mastery, may, by removing one of them, have the sap which would have been expended in both, diverted into a more eligible channel; and thus the tree becomes in every respect more useful. By pruning, however, you weaken the power of a tree to thicken its stem; hence it is that unpruned trees, and such as stand wide apart from each other, have a greater circumference of bole than those which stand close to each other. The removal of a branch at bottom will of course send the sap to parts higher up, and hence a greater elongation of stem, This elongation of trunk is almost in all cases desirable and necessary, for without a bole a tree is of little use either in home carpentry, ship-building, or in any other art. It consequently follows that pruning, or some other means of displacing the side branches, is absolutely necessary.

The perfection of pruning is to carry up as much thickness and strength in the bole as you can, and yet to produce in all cases a sufficient length of trunk. A nicer process than this is not to be found in the vegetable kingdom. The leaves are all wanted to draw up the sap, prepare, and send it back fit to be taken into the general system, dispersing health, beauty of colour, and rigidity of fibre through all its parts, and yet you want to displace a great part of them, so as that the central stem may be heightened, and the same completeness of strength and beauty maintained. How then is this delicate and critical work to be performed ? Inexperienced practitioners who are sent indiscriminately into the woods, consider not how much depends upon the process they are about to perform; and I cannot help again expressing astonishment that those who are ignorant of the first principles of vegetable life, should have been so long employed in taking charge of our plantations.

Section I.—Pines, firs, cedars, yews, and all other cone-bearing or resinous trees. I am averse to the ordinary systems of pruning being applied to this class; first, because they are apt to bleed excessively ; and, secondly, because when planted wide apart so as to permit large healthy branches to proceed from the bottom of the bole, the lopping off of such branches causes a defect in the timber when in the hands of the carpenter. In the natural pine forests of Abernethy, in the north of Scotland, the trees rise in thickets, so close to each other that no side branches of any size can grow out of the stem, so that the vigour of the tree is directed upwards to the light and air. Be it remembered that in the district referred to, there is not any continuous forest without interruption, but open spaces surrounding the thickets, *breathing places*, as it were, where the air circulates freely. Now in forming plantations of coniferæ, I should in a great measure follow nature, by planting the trees at first so close to each other as to prevent vigorous lateral branches, and by a process of thinning and lopping off such under spray as grow from the trunk, gradually introduce the air to the stems so as to render the wood hard and durable. This air I should introduce from open spaces, which should be left in every wood of considerable extent; for it is unquestionable that the more air that can be allowed to circulate about a tree, the harder its timber will be. It may be observed that the cutting out of a branch under such circumstances will not cause the stem to bleed; for trees so planted send out spray at the bottom, which in a season or two becomes dormant and quite useless to the stem.

The season at which all pruning should be performed is winter—early in winter—because if deferred until the roots have sent a supply of sap all over the tree, the quantity in the branches to be lopped off will be lost. This remark, however, will apply with greater force when I come to speak of the pruning applicable to broad-leaved trees.

Close pruning, or pruning close to the stem, should be invariably practised. When a stump is left on a pine, which is sometimes done by those who are afraid of the tree bleeding, it generally dies and rots, and in the course of time is covered over by the bark, and thus gets incorporated with the wood, though generally forming a flaw. A hand-saw and chisel are the best instruments to use in general pruning; and for young trees with a slender bole, a large pruning knife is equally efficient.

From what has been said, it must not be supposed that pruning is in any case recommended for such trees as are designed for ornament only. The effect of scattered groups on a lawn, or in any situation where beauty is the chief consideration, would instantly be destroyed were the branches to be removed; and the same remark is applicable to borders of such plantations and woods as come into view in any landscape.

Section II.—Broad-leaved trees, such as the oak, elm, beech, plane, and sycamore.

No tree is furnished with more leaves or spray than it absolutely requires to perfect its structure, so that any degree of pruning, however moderate, appears to be hurtful to a healthy tree. But as trees without boles are of little use, it is absolutely necessary that they should be subjected to man, and fashioned as much as possible to his purposes during the period of their growth. It is not meant to be said that a tree, after having been moderately pruned, will not regain its original vigour; yet it is indisputable that such an operation disturbs the delicate organization of that object, just in the same way that the amputation of a man's arms seriously affects for a certain period the course of his health, which after a time, however, is re-established. If a tree had the power, when mutilated, to break forth to a certain extent, so as to make up for the loss it had sustained by such a mutilation, the difficulty of pruning would be at once at an end; but a tree has no such power, and we again recur to the fact, that without the top-agents, or spray, the structure is a helpless one.

The plan to prune, then, and it is one which I have invariably pursued, is to do little at a time, leaving the tree in possession of as many of its top branches as you can consistently with the required length of bole; but the pruner is not to go regularly upwards with his operations, for that would be the vulgar and highly-injurious practice of *dressing*, but he is to take out first the larger branches, leaving the smaller ones to swell out the trunk, which in their turn will be removed when that object is fulfilled. Experienced men know at a glance the proportion a stem should bear to a tree of a given height; and in general it may be stated, for example, that a well proportioned larch, 18 feet or 20 feet high, should have a trunk, at one foot from the ground, of 14 inches in circumference; an elm 25 feet high, should be at least 18 inches at a foot from the ground; an oak 15 feet high should have a stem of 14 inches; a lime 20 feet high, 12 inches; a horse-chestnut 25 feet high, 24 inches; and a Lombardy poplar 35 feet high, should be also 24 inches. Soil and situation, and other circumstances, will of course alter the relative proportions, as well as the height and thickness of a tree; but in the generality of cases the above dimensions may be considered as approaching to the proper standard. Though it is stated that little should be done to a tree at a time, it is not meant that the system of pruning should be kept up, as is too frequently done, till nearly the end of its life; for *the sooner the tree can be formed and left to itself, the more satisfactory will be its increase.* Indeed, there should be no occasion to touch a timber tree for twenty years before it is cut down.

As to the *manner* in which the operation of pruning should be performed, most persons are agreed. The branch should be taken clean out, so that the cut may be level with the trunk. The practice of foreshortening the branches, or cutting them off at about a foot or a foot and a half from the trunk, only causes the dormant buds or spray which may be upon the part left to break out, and thus increase the size of that part which has ultimately to be removed. The lime, elm, oak, alder, willow, poplar, and several others, almost invariably throw out small spray in this manner; whilst the same parts left on the birch, beech, and larch not unfrequently die, and thus cause a complete barrier to the healing up of the trunk, besides causing an inlet for rain and insects.

The proper *time* for pruning would appear to be the autumn, after a tree has shed its leaves, and before the roots commence to absorb the sustenance destined for the support of the whole frame, because that portion of sap intended for the branches lopped off will be distributed over the parts remaining, provided the loss of branches is not such as to cause a general disarrangement throughout the system.

Luckily for England, and its untaught pruners, the tree which best suffers every barbarity that can be inflicted upon it, is the elm (Ulmus Campestris), found plentiful in every county, and a general favourite in our hedgerows. When large branches are cut off from the stem, it usually furnishes itself with small twigs instead, which are of the highest importance in thickening the bole. Around London, where the tree is even stripped from the bottom to the topmost twig, it readily breaks forth in a bottle-brush fashion, clothing itself with spray sufficient at least to keep the trunk alive. The ash, again, is a difficult tree to manage, its branches being few and of a large size. If a false step is taken, it has not the power of recovering itself speedily; hence the necessity of well-judged treatment applied to this individual. The birch is in some respects a shy tree, impatient of the knife; and if there should not be a proper communication kept up between the roots and the leaves, this great adornment to the crag will cease to display its beauty. This must arise, I think, from a peculiarity in the bark, which is much harder and more durable than the wood, and which no doubt requires the full agency of the leaves to enable it to expand. The oak presents nothing which the usual routine of careful pruning may not overcome. Removing the larger branches and leaving the smaller ones for a year or two to perfect the stem, was the plan which Marsham pursued; and his plantations at Stratton Strawless now display more perfect models than are to be found perhaps in any other place of similar extent in England.

Thinning is so intimately connected with pruning, that it may be alluded to under the same head. Both processes have for their object the admitting of light and air. Thinning will not fashion a trunk, but it will harden it, and improve the fibre of such trees as remain; and it would be quite useless to insist upon the performance of the one operation without the other. In the forest of Dean, great numbers of oak trees planted in masses, about forty years since, have stems sixty feet in height; but as they have never been thinned out, they must be almost worthless, either as respects the durability of their timber or the size of the trunk. The oak is a wide spreading tree naturally, and though it is not necessary to expose its under branches freely on all sides to the air, the rule is, that a full grown tree should, at thirty feet from the ground, have a free area to breathe in. The same fact is applicable to all other trees in proportion to their height and the spread of their branches. JAMES GRIGOR.

HORTICULTURAL BUILDINGS.

WINTER PRESERVE.

OF these there are as many varieties as of any other description of building for gardening purposes. The very best is half a ridged house,—that is, a wall, say three feet high, and a roof sloping upwards with three feet rafters. The back of this being to the north-east forms a complete screen to those perishing winds, while being open to the south and west gives them all the advantage of sufficient sun: the roof is covered up to the ridge behind, but left with the rafters only on the other half, so that mats, waterproof cloth, or any other covering may be placed over at night, and in frosty weather. A construction of this sort keeps off a tolerably hard frost, and must always be covered up from the wind, which in winter time does more mischief than half the apparent hard frosts. These constructions are sometimes made with reed backs and roofs, and, except that they harbour vermin more than a wall, there is no objection, for they are quite as warm as bricks. We have seen a very complete thing made with common boards, the roof formed of shutters, which will turn right back one half on to the other, and the sides of which let down; these will shut up entirely, but we do not like them so well as a solid brick wall of three or four feet high at the back only, one half the roof covered and the other half with the front entirely open, to be covered over with mats if required. Azalia Indica will do well in such a place, and many plants which would be perfectly proof against frosts in the open ground, require this kind of protection if potted off, as the frost will often get through the pots and injure the fine fibres which are next the side unless they have some such protection as this winter preserve. But there are many persons who use the irons put into the form of uprights and a ridged roof: these are stuck in the ground even with each other at distances of about four or five feet at most, and when so placed, quite even, long strips of wood, about the thickness of laths, are tied to them, one length at the top or point as it were of the roof, one at each shoulder, and one on each side, half way between the top and the shoulder. In these the mats are thrown over in bad weather only; but we need hardly say it is a very inferior contrivance to a brick-built place like that we first mentioned: however, if there be plenty of covering, and that be put on in time, plants will take but little harm. Of course, such places as these are unfit for most greenhouse plants, and will only do for those which are commonly called half-hardy, or are made so by removing them from the ground to pots; but it is in constructions of this kind, and coverings for frames and pits, that the value of the transparent varnish will be found; for covered up as plants in such places must be during any long frost, they suffer dreadfully from the darkness, whereas it is doubtful whether, if they are well lighted, they would suffer at all. The Tulip beds round London are all under such a preserve as we have described, formed with irons with slips of wood along them to prevent the coverings from falling through. Some of the owners have the tops rounding like the tilt of a waggon, but the ridge like the roof of a house is far better, and the wet runs off quicker, nor does it hold so much snow or risk so much the drip; however, if the covering be the transparent waterproof varnished cloth or calico, wet cannot affect it, however heavy, and this is important, as the plants should be dry in winter.

THE CULTIVATION OF HARDY LILIES IN GREAT BRITAIN.

THERE is scarcely a more interesting genus of flowers than "The Lilies of the Field," and in this country we consider the hardy ones alone can fairly come under this division. We never pass a cottage garden in which the splendid white and orange lilies are growing, without regretting that they are not more generally adopted as garden ornaments in well-kept establishments. They are graceful even before they flower, and handsome in all stages; but when in bloom, they appear one blaze of colour, and throw the most brilliant things in the garden into the shade. The white is considered by Paxton the original species; but beyond being one of the earliest introduced, and, therefore, one of the first with which we in England were acquainted, we cannot go. For instance, it was introduced in 1596, together with Lilium Bulbiferum, or orange lily, and its varieties, from Italy; Lilium Croceum, or yellow lily, Lilium Glabrum, or orange lily, the Martagon lily and its varieties, white, purple, and yellow, from Germany; Lilium Pyrenaicum, a dark orange, from the Pyrenees; but from their great plenty we have no doubt the white were the greatest favourites at the time, and from their richness and delicacy they should be the favourites now, in all flower gardens. But there has been many additions to the family of hardy lilies. The following may be considered the most perfect list that can be given of the hardy kinds. Those which require protection will be the subject of a future notice.

Lilium Andinum, from North America, bearing a scarlet flower in July.

Lilium Aurantium, from Italy, bearing an orange-coloured flower in June.

Lilium Aurantium flore pleno, from Italy, bearing a dark orange-coloured flower in June.

Lilium Aurantium minus, from Italy, bearing an orange-coloured flower in June.

Lilium Aurantium variegatum, from Italy, bearing a dark orange-coloured flower in June.

Lilium Bulbiferum, from Italy, bearing an orange-coloured flower in June.

Lilium Bulbiferum minus, from Italy, bearing an orange-coloured flower in June.

Lilium Bulbiferum umbellatum, bearing an orange-coloured flower in June.

Lilium Bulbiferum variegatum, bearing an orange-coloured flower in June.

Lilium Buschianum, from Siberia, bearing an orange-coloured flower in June.

Lilium Canadense, from North America, bearing a light orange-coloured flower in July.

Lilium Canadense rubrum, from North America, bearing an orange-coloured flower in July.

Lilium Candidum, from the Levant, bearing a white flower in June.

Lilium Candidum spicatum, bearing white flowers in June.

Lilium Candidum striatum, bearing white flowers in June.

Lilium Candidum variegatum, bearing white flowers in June.

Lilium Carolinianum, from North America, called also Lilium Autumnale, bearing orange-coloured flowers in July.

Lilium Catesbœi, from China, bearing scarlet flowers in July.

Lilium Chalcedonicum, from the Levant, bearing scarlet flowers in July.

Lilium Concolor, from China, bearing red flowers in July.

Lilium Eroceum, bearing yellow flowers in July.

Lilium Glabrum, bearing orange flowers in June.

Lilium Japonicum, from China, bearing white flowers in July.

Lilium Latifolium, from some parts of Europe, bearing orange-coloured flowers in July.

Lilium Longifolium, from China, bearing white flowers in May.

Lilium Martagon, from Germany, bearing a purple flower in July.

Lilium Martagon albo pleno, from Germany, bearing a white flower in July.

Lilium Martagon pubescens, from Germany, bearing an orange-coloured flower in June.

Lilium Martagon sepalis albis, from Germany, bearing a white flower in July.

Lilium Martagon sepalis plurimis, garden variety, bearing a purple flower in July.

Lilium Monadelphum, from the Caucasus, bearing a yellow flower in June.

Lilium Nepalense, from Nepal, bearing a white flower in July.

Lilium Penduliflorum, from North America, bearing a copper-coloured flower in June.

Lilium Peregrinum, from the Cape of Good Hope, bearing a white flower in June.

Lilium Philadelphicum, from North America, bearing a scarlet flower in July,

Lilium Pomponium, from Siberia, bearing a red flower in May.

Lilium Pomponium flore pleno, bearing a red flower in June.

Lilium Pumilum, from Dauria, bearing a scarlet flower in July.

Lilium Pyrenaicum, from the Pyrenees, bearing a dark orange flower in July.

Lilium Pyrenaicum flore pleno, bearing a yellow flower in July.

Lilium Sibiricum, from Siberia, bearing a yellow flower in July.

Lilium Speciosum, from Japan, bearing an orange-coloured flower in August; called also, Lilium Lancifolium.

Lilium Spectabile, from Dauria, bearing a light orange-coloured flower in June; called also, Lilium Pennsylvanicum.

Lilium Tenuifolium, from Siberia, bearing a scarlet flower in June.

Lilium Tigrinum, from China, bearing an orange-coloured flower in July.

The various forms of the Lily might almost be said to divide them into families, but they have been added to so repeatedly, from time to time, that were we to go by the form alone, many of the new varieties would claim a place among some that are unlike them in anything but form. There are some that will, from their plentifulness, continue to be grown in large numbers, and these may be classed a little.

First, there is the old White Lily (*Fig.* 1,) bearing a spike of bold white flowers, almost erect; these have broad petals, and form a noble figure in the gardens. Of these there are many subvarieties.

The next, and it is a large family, is the

Martagon, (*Fig.* 2,) said to be distinguished by the hanging of the flowers, whose petals turn back, and show their inner surface only; of this there are also many varieties; but there are also many Lilies which have this character about them, which, nevertheless, do not belong to the Martagon Lily.

Fig. 1

Another great character among Lilies is that of Longiflora, (*Fig.* 3,) grown with so much success at the Clapton nursery. The flowers of these are very long, and horn-shaped, the mouth being very open, trumpet-fashion, and petals rather reflexed, but not much.

The Tiger Lily (*Fig.* 4,) is of a family whose characteristic comes near the Martagon, so called; for the petals reflex, and it is richly spotted; but the petals do not so completely curl up or roll up as some of the other varieties do. It is, however, worth notice, if it be only to show how nearly some of the kinds approximate, without being the same.

Lilium superbum (*Fig.* 5,) is one of the Martagon or Turk's-cap form, but the flowers are larger, and the petals much longer than others of the family. To us it is less inviting, because there is less distinctness in the colours; there is more of a green cast in the bloom, as if it were not in full perfection. The plant runs taller than any, generally not less than five or six feet, and it is said that it will rise to nine or ten in congenial soil and situation. It has also been described as capable of bearing forty flowers on its spike, which we doubt, though much may be done by culture—in this country it rarely exceeds from ten to fifteen.

The last we shall describe is where the flower is wider and petals reflex more—a bolder and richer looking variety than Longiflora. It is called Eximia, (*Fig.* 6,) and the character is distinct, through the petals reflexing more and hanging down. The dwarf character of these latter varieties or species is greatly in their favour, and they are at this moment in great esteem.

There are other forms of flowers, but their differences are not great from one or other of those we have described, and every year adds to the novelties introduced, although many are not materially different in form to one or other of those mentioned in our list.

Some of these Lilies have variegated foliage, but they are not esteemed for their flowers, and, indeed, only as curiosities at all. The best of the variegated is that of the original white, whose foliage being thick, and handsome, always forms a pretty object in the borders, even before the bloom appears.

The treatment of all these is simple: they require a good soil of sandy loam and decomposed dung, through which the water will run freely, and the border should be well drained. Some pains might be taken with advantage to grow a collection of these noble exotics, for although they will grow almost any where, they will appear like another race when grown, as they should be grown, in a well-drained border of light rich porous earth. There are many flowers called lilies, which, however, are not of this family: the lily of the valley, the sheath lily, the day lily, and various others, which are different genera. Some of the kinds we have mentioned have buds exactly like small bulbs at the axils of their leaves; these fall to the ground, and grow into bulbs similar to the parent in all respects: so that nature has provided no less than three different modes of propagation—first, by offsets from the bulbous roots; secondly, by those bulbous buds which come at the axils of their leaves; and thirdly, from seed. The two former modes perpetuate the original kind in all particulars, the third not so strictly confined to the parent kind, but liable to variations, though tolerably constant in general, unless fertilized artificially by the pollen from a different variety. To prepare a bed

Fig. 2.

or border for these flowers, choice should be made of a spot naturally rather dry; the bed or border should be dug eighteen inches deep, and the bottom six inches should be dry brick-rubbish or lime core; upon this some leaf-mould, to make a good inch as a bottom. Fill up the bed with loam, peat, and decayed cow-dung, in equal portions; and in this plant the flowering bulbs, in such form as you think best adapted to the purpose you require. If, for instance, it is a long ornamental border, they should be planted in patches of three, forming a triangle of a foot from point to point; this looks well at first, and allows the offsets to grow and bloom, for they ought not to be disturbed until the end of the third season, during which period many offsets will have grown to blooming roots, and each group will, in the third season, have made a rich appearance. If the object were to form clumps or beds, they should be planted one sort in a clump, and a foot apart every way; but in any case they should be left three years undisturbed. In the usual way, where lilies are cultivated in collections, the beds are long and formed as we have described, and the different kinds are grown in short rows across the bed; but in general borders, of a mixed character, these flowers are to be used in the same way as any others, for the sake of their colours, and the diversity which they produce or assist. In May, June, or July, there is no flower to eclipse them; and the most distinct characters should be chosen where the number is to be limited. For instance, the following can hardly be dispensed with, whatever may be done with regard to others.

The White Lily, (Lilium Candidum,) which has a leafy stem, four feet high, ending with a spike of beautiful white flowers; of this species there are several varieties, but some are rather distinctions than differences.

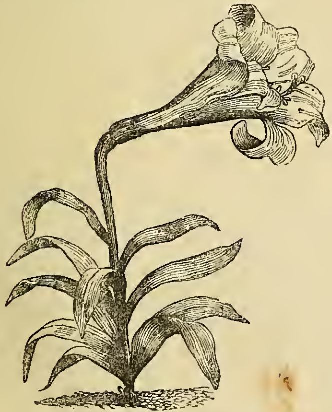


Fig. 3.

The Orange Lily, (Lilium Bulbiferum,) with a leafy stem, three feet high, terminating with rich orange-coloured flowers: a good contrast to the white, and fit to be placed nearer the front of a border, because a foot shorter. This variety has the scaly buds, which fall off and grow to regular underground bulbs, like the parent. Of this there are many varieties also.

The third sort to be recommended for limited growers is the Martagon, of which there are different colours, say four kinds: these are as gay as any of the tribe, and are about the same height as the orange lily, or between that and the white. Lilium Chalcedonicum is called the scarlet Martagon, although not named among the Lilium Martagon.

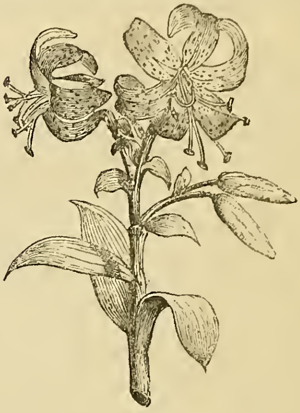


Fig. 4.

The Lilium Japonicum is a noble flower, six or seven inches broad, on a stem five feet high. To these may be added the Turk's-cap Lily, (L. Canadense,) and the Tiger Lily, (L. Tigrinum;) these are some of the most showy of the tribe, that can be grown out of doors, almost without care or trouble, but which come, nevertheless, so much finer with a little of both, that they will repay us. If, then, flowers are grown in unprepared borders, the offsets should be regularly planted in beds prepared as we have mentioned, and allowed room to grow. The offsets should only be taken from the old roots once in three years, as we have already mentioned. This should be when the bloom has gone off and the stems have died down; they must then be carefully lifted, for the scales of the bulb easily break off, and that damages the plant. The offsets should be carefully detached, and laid on one side; the old bulbs should be replanted, or if not, should be packed in sand, for they must not be allowed to dry up. When they are disposed of, and the offsets of all sizes are taken away, the bed in which they are to be grown should be dug well, and the soil well bruised or broken; then either draw drills across the bed three inches deep, or have a blunt dibber, large enough to make holes appropriate for the offsets; plant them six inches apart in rows across the bed, and a foot from row to row, keeping the sorts well separated, and labels attached, that they may be known before they bloom, as well as in bloom. The third year these offsets may be taken up; the majority of them will have become blooming roots; these will soon throw more offsets, which must be served in the same way, while the blooming roots may be planted where they are to remain awhile.

The Orange Lily, and such as have the small scaly bulbs on the axils of the leaves, should have them gathered before they fall, and when they leave their places easily; these may be planted in drills across a similar bed to that we have described, covered not more than an inch; they should be almost three inches apart; the rows should be a foot apart, that they may be the easier kept free from weeds: here they must be watered if the weather be dry. They will soon be up, and as the growth will be tender at first, it will be as well to cover them with a little litter as they approach the winter: nothing more is required but to keep the bed clean. In the spring they will begin to grow again, and in hot weather may require a little water, but nothing further is required till the decline of the leaf; they will then be large enough to remove into another bed, six inches apart in the row, and a foot between the rows: here they may remain until they bloom.

Fig. 5.

In raising the different varieties of Lily from seed, you must provide shallow boxes filled with compost recommended for beds, only that it must be sifted through a coarse sieve to take away any large stones. As soon as the seed is ripe in October, they must be sown in these boxes thinly and evenly, and some earth sifted over them to cover them a quarter of an inch. The object of sowing them in boxes is to be able to move them about. At first they must have only the morning sun. In November the boxes must be removed to a situation where they will have all the sun, and be screened from the north and east wind; here they may be till April, when they must be removed into the first situation again, and the plants will be above ground. If, however, you have the convenience of a garden frame, it is better to place the boxes or pans in it at once, because in a frame they can be shaded or thrown open to the sun without any removal at all. In the following August or September, when the leaf has died down, they may be planted out in such beds as we have described before, in the same way as the bulbs from the axils of leaves, covering them with peas haulm or litter till the spring, when it may be cleared off, and the plants will be up. All through the cultivation, weeds must be drawn out, and the plants kept perfectly clear. In two seasons from planting out, they must be taken up and planted in a fresh bed six inches apart in the rows, and a foot from row to row. The only way to preserve the roots while out of ground is in sand, but where there is no necessity to keep them out, they are far better planted directly.

Fig. 6.

TRANSPLANTING.

The whole art of transplanting consists in the removal of plants from one place to another; and unless this be done without any material damage to the roots, the plant must suffer in health, and sometimes die altogether. Generally speaking, there is no difficulty in removing plants when young, and if they were removed every season they would hardly be the worse for it; when, however, we attempt to remove trees, plants, or shrubs, that have been many years undisturbed, the greatest care must be used to prevent injury from the loss of fibres, which, with all our attention, will be broken, and the plant must suffer in proportion to the damage done to the root.

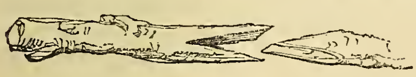
Two facts may be relied upon in the consideration of this subject; first, the growth of a tree is always in proportion to the under growth of its roots, and the head maintained grows as large as the roots will allow it; secondly, that any damage the roots sustain checks the growth of the tree or plant. From these two facts all the art of removing trees and plants should be learned, and upon these two facts all the art is founded. In transplanting seedlings of almost any kind, there is no difficulty, because the roots being easily removed whole, the plants suffer nothing. In seedlings of all kinds there is a strong disposition to make new roots, and, if the fibres are damaged, but little mischief accrues. It is when plants have stood some time, and their roots have made considerable progress, that the difficulty of removal begins to arise. Here, then, we have particular duties to perform; the first is, by carefully removing the earth to the very end of the root, to get the plant up with as little damage as possible; and, secondly, to curtail the head sufficiently to allow for the damaged powers of the root. In taking up nursery plants, where despatch governs every thing, the roots lose considerably, and the ends of all the main spreading portions are invariably chopped off with the spade. This forces on us another operation: we have first to cut smooth all the bruised ends, and, secondly, to prune off a considerable portion of the branches, to diminish the evaporation and consumption of moisture; some trees, indeed, are so much inclined to grow and strike root, that they would live almost if the roots were chopped off; but there are others which are extremely impatient of damage at the roots, and, if not very carefully removed, will fail. Again, there are many trees that cannot be pruned; for instance, Cedars, Firs, Arborvitæ, and trees of that description, must not lose a branch, or they lose their beauty; hence the necessity of removing every fibre of the root with it, if the tree is to live; while the trees are small there is but little difficulty. But the more valuable kinds are generally kept in pots a few years, that they may suffer nothing by removal. As they advance in growth, the pots are changed; but at length they are turned out into the ground, and for one year, or even two, they might be moved well and easily, because their roots have not had time to spread; but, after that, the difficulty increases every year, and it is a tedious as well as troublesome job to follow out the direction of the roots, and extricate them from the ground, without damage. But certain it is that the only conditions required on removing a tree, of any age or kind, are these: First, to release all the root from the ground, without bruising; secondly, to remove the tree whole, as it is, and undamaged, from where it was to where it is to be; thirdly, to preserve all the fibres thoroughly moist, from the time it is released from the ground until it is replaced; fourthly, to support it in such way, on replanting, as that the earth may be all among the fibres and roots, solid and proper, as it was when it was moved; and, lastly, that in treading and pressing the earth about it, the fibres shall not be pressed together, nor the roots bent out of their places. These conditions attended to, and the largest tree in the world would remove well, and without suffering materially. Still, it is next to impossible to comply with all these conditions with very large trees, and therefore large trees are seldom removed, and rarely live after removal. Many contrivances have been resorted to; but there ought to be two years' preparation before it is attempted. This preparation consists of digging a circle round the tree, and cutting off the roots that extend beyond this; and as even this may be too much check, if all done at once, it is necessary to do it at two different periods, by opening four opposite places, and at each place cutting away an eighth of the circle, building a wall within a foot of the remaining roots, and filling up that foot with the soil again, as well as the hole outside the bricks; new fibres and roots will spring out, and almost fill the space to the bricks. The next season the other four spaces may be opened, and the roots cut off at the same distance. At this time there must be some undermining, to examine whether there be any roots running very deep or downwards, like a tap-root; and if there be any, they must be severed before you build walling to complete the circle of bricks. If these operations be well conducted, there will, by the next moving time, be a mass of roots within the brick wall capable of sustaining the tree; and the removal, without damage, will be accomplished with little risk. The only thing then required is power; for by clearing all round the outer part of the brick wall first, and then pulling it down, the roots will be undamaged, and the ball of earth entire. But too much importance is attached to the ball of earth in all cases: thousands of trees have been moved with balls of earth to them five times the weight of the trees themselves, while the roots have been dreadfully shortened all round, and the principal nourishing portions removed. In removing very large specimens, some nicety is required in reducing the head enough to make allowance for the decreased power of the roots, without injuring the general figure and appearance. Even in adopting the plan we have suggested, which is too troublesome for anything but a really valuable and large specimen, the head of the tree should lose something, and it will require some ingenuity to remove those portions whose removal will not injure the appearance of the specimen. But the same principles that govern us in the case of a large tree should be observed in transplanting all things. One certain fact is, that whatever the root suffers checks the tree, and unless the subject be the better for checking, the plant must be reduced, and therefore care must be taken to prevent the root from suffering. But many subjects are the better for the check; that is to say, they would be too luxuriant without such check; hence the practice of root-pruning, to check fruit-trees, a practice that hastens maturity and brings on fruit-bearing. This was the inducement to disroot pines, which some people have complained of as unnatural culture; but our forefathers were not such dolts as the present generation would have us think them to be. The old lesson read to us in our boyish days would apply to many theorists who undermine old practices, a truism not to be despised by any means, though not always right as applied to modern changes,—"Young folks *think* old folks are fools, but old folks *know* young folks to be fools." The pruning of roots checks the flow of raw sap, which induces rank growth, and allows that already in the tree to elaborate and adapt itself to the fruiting process; and if roots are not pruned, or a check given artificially, the tree must push on with vigour, forming leaves and branches, but no fruit, until the tree attains its mature size, and the roots have settled down the supply by lessening it sufficiently, when that sap which is supplied will properly elaborate, and fruit is the consequence. Confine the roots of a tree in a pot, and stunted growth is a certain consequence. Cut away the parts of a root which wander farthest, and a more sudden check takes place; yet it so lessens the quantity of nourishment taken up, that, presuming it be not too violent, it hastens the blooming and fruiting; carry this operation too far, and the check is too great; yet a little further, and the tree dies, because the leaves give off more moisture than can be taken up. The only chance, therefore, of saving trees of which the roots have been too much damaged, is to lessen the work which the roots have to perform, when the life will be saved. We have, in the clearing of a piece of ground, met with accidents, and destroyed more root than we ought, chiefly in consequence of some vigorous growths taking place out of the usual situation of roots; more than half has been destroyed perhaps. It has been on such occasions that we have tried experiments: plant such trees or shrubs as they come up, and they die; lessen the head a good deal, and they live, but are sickly; cut a very large portion down, and the remainder will not lose a leaf. Hence it is that plants of all kinds that are inclined to grow too vigorously receive a wholesome check when they are young. Hence it is that fruit-trees are root-pruned, and bear the earlier for it. Hence it is that pine-apples are disrooted to hasten their fruiting; and many plants that are apt to run away and grow too fast are frequently removed, and each time with the loss of some of their roots. But, on the subject of transplanting, it will be desirable to particularize many differently habited trees, shrubs, and vegetables, in papers devoted to themselves. It is enough to lay down, at present, as an unerring fact, that the loss of roots checks growth; that the only way to counteract this, when the check is not desirable, is to take extra pains to preserve them, to remember that every fibre that is broken is the loss of a means of support, and that, to maintain the plant healthy, it must be reduced in exactly the proportion that the root suffers; so that plants like firs, which cannot be cut down without the destruction of their symmetry, must not lose any portion of their roots, because there are no means of lessening the consumption, and therefore we must not lessen the supply.

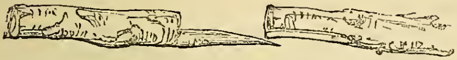
HYBRIDIZING.

In bringing before the notice of our readers the practice of hybridizing, we have to remind them that nothing should be done without a meaning as clear as the sun at noon-day; nothing should be attempted without an object, that object being the improvement of one or other of the flowers on which we are at work. Now, the only points to be gained by hybridizing, are first to obtain the properties or qualities of a tender plant upon a hardy one, or the flowers or colours of an ill-habited plant upon one of good habit. Generally speaking, these two points comprise all that can be gained; but there may be another object, which is only comprised in those mentioned by implication—the mixture of colour between plants of equal, or nearly equal claims. The first of these objects is important, and has been accomplished to a great extent in the Rhododendron. The difficulties attending this operation with many flowers are, first, the species flowering at different seasons; secondly, their flowering in different places; for there are certain rules to be observed, without which failure is certain. The pistil of the female plant, or rather the plant which is to bear the seed, has to be impregnated with the pollen or farina of the male plant, or the one which is required to impart the desired property; and this requires some nicety. First, the seed-bearing plant must be watched, and as soon as the flowers open, the stamens, which hold the powder called pollen, must be taken out by small tweezers before they burst, indeed, as soon as they can be got hold off: this secures the pistil from being impregnated by the flower itself. The next is to observe from hour to hour, or from day to day, and as soon as the top of the pistil is glutinous, it is ready for the operation, and at that time the pollen must be applied: consequently provision must be made for it, by forcing or retarding the other plant, so that the pollen shall be ready at the time. One thing is certain, if the pollen be not ready, there is no hope; but if it be ready beforehand, it is possible to keep it. We have carried it a hundred miles, and kept it some days, yet it has answered; but how long it could be kept has not been yet proved. It has been said that it could be carried a long voyage, and even then be efficacious. In the case of a Rhododendron Maximum, while being impregnated with a R. Arboreum, the latter was in bloom three weeks before the former; yet every stage of the process proved, as well as the result did, that the operation had perfectly succeeded. The plan we adopted was, to cut out the point or end of the pistil directly the flower opened, and as the pollen-vessels burst we gathered the single flowers from the bunch, and placed the stalk in water in one of the holes of a pansy-stand, covering it with a wine-glass, which completely excluded the air as we flooded the surface, that the edge might stand in water. This we did with each bloom as soon as the pollen appeared, so that, before one plant was ready to receive impregnation, we had all the flowers of the Arborea off the bunch some days. The flowers had almost perished, the farina had fallen to the bottoms of the cups, and we took it out with a camel's-hair pencil, and applied it to the pistils of the hardy plant, which had been accelerated all we could by protecting with glass. This merely proves that the pollen might be brought from great distances if done with care, and some persons speculate on its keeping as well as seed. This may be tried: our business is to tell what we know, and not to speculate on what may be done; but as opportunities of procuring flowers offer frequently, they need not be lost; and our opinion is, that flowers, picked in the usual way, and shut in a book, might be preserved some days in sufficient order to perform the operation. We have once in our lives seen rather a curious affair, in which a florist, something behind his neighbours in a flower which shall be nameless, sent to one who had made considerable advances for a few flowers to inspect, and with these actually impregnated some of the best of his own, and made a rapid start in a season, much more so than he had made in half-a-dozen years previously. From this it may be gleaned, that when people send out choice flowers for inspection, they will have to deprive them of their pollen, or they stand a chance of making rivals almost before they are ready to send out their own plants. The mode of performing the operation having been described in part, we have merely to add, that some flowers are much more difficult to hybridize than others, and that unless they are caught at the moment the pistil is glutinous they will be crossed by some other flower, or by themselves. The instances of hybridization in various flowers will be recognised in many families, but in none more than the family we have mentioned; for in that the operation has been successfully performed by the bright yellow Azalia Sinensis, which is deciduous, upon the Rhododendron, which is evergreen; and here there is something worth trying for. The term has generally been applied to the crossing of species; but the cross-breeding of flowers for the improvement of their properties is carried on to a great extent, as is evident from the Pansy, the Rose, the Mimilus, Phlox, Verbena, Pink, Carnation, Tulip, Auricula, Fuchsia, and many other subjects; and those who will perform it, instead of leaving it to dame Nature, may, generally speaking, calculate upon a result with more certainty. The first object with a plant is to save seed from the best habit. With a flower, we should select the best form and texture; and it is only when two flowers are distinguished for equal, though different, good qualities, that we can recommend both to be crossed; for here the chances are that both will yield improvements; but where the form of a flower, or the habit of a plant, is bad, and the mere colour or size is the object to obtain seed, only the plant of good habit, or the flower of good form and texture. In hybridizing or breeding the Pansy, seed from a round, thick, smooth flower. In Tulips, seed from a pure yellow, or pure white ground, with a thick, smooth, flat-ended petal, that forms the most even-edged cup, and the rounder the better. In a Rose, take the thick, well-imbricated petal, that opens freely. In a Verbena, take the roundest flower, the freest from notch or serrature, and the most stiff petal. In Petunias, seek for the thick round flower with the flattest lip. In Auriculas, look for the flattest, roundest flower, with the smoothest paste, the smallest tube, and the evenest divided colours; for the widths of the white colour and edge ought to be alike. In the Ranunculus, which has been produced all but, if not quite, perfect, the semi-double varieties that are nearest to double, with bright, broad, thick, smooth petals, and let the pollen you apply come from flowers which are desirable on account of colour; nor does it matter what flower it is, all that has to be done is to select that which is most desirable for form and texture as the seed-bearer, and that which is most conspicuous for colour or size. The Fuchsia Fulgens was the means of deteriorating the whole race of Fuchsias, and the benefit of crossing was hardly felt for years. The coarseness of all the novelties was proverbial, not because pains were taken to hybridize, but because Fulgens happened to be a free seeder, while the more elegant species were very shy seed-bearers, and florists merely sowed the seed from the former because it grew to their hands. Since this, people have been more careful, and the Fuchsia is rapidly improving. It is curious that the very seed-pods of flowers frequently change character; those in the habit of coming small often come large; and seeing these, we have a curious field for speculation in the adaptation of the principle to fruit. For instance, by impregnating fruit, for the purpose of observing whether there is any distinct alteration in the form or flavour of the produce the same year; not that it would indicate exactly the kind of fruit that the seed therein would produce, but that it might make a difference in the fruit, as it often does in the seed-pod. We know there is a difference produced in the seedling fruit that comes afterwards from the seed of the fruit impregnated; but of hybridizing in the case of fruit we shall speak hereafter, as well as of some flowers which present, from their nature, some obstacles to the operation.

GRAFTING.

This operation is of high importance in practical gardening, for although hundreds of subjects can be raised from cuttings they cannot be rendered useful for years; while the same cutting grafted on a vigorous stock might form a tree the second year. The whole strength of the stock may be thrown into the small piece grafted on it, whereas if grown as a cutting it could not grow at all until it struck root, and even then but slowly for a considerable time. The advantages of grafting are not limited to this nor any other, but are many. First, it enables us to multiply any new or distinct variety to a much greater extent than by any other means, because a piece with a single bud on it is sufficient for a graft. Secondly, it enables us, if desirable, to throw greater or lesser nourishment or vigour into the graft according to the stock we place it on. Thirdly, it enables us to change the variety of any tree, or shrub, or plant already established, instead of removing the old tree or shrub and placing a new one in its stead. The manner in which the operation is performed is adapted to the circumstances under which it is undertaken: for instance, if grafting is performed for the purpose of multiplying a variety, stocks of the proper kind are selected, for the purpose of conveniently removing when the graft has taken; generally a year established in the ground if for fruit trees, or a year old in pots. The first is because fruit-trees and shrubs in the open ground ought not to be more than three years in a place undisturbed; and therefore as one year after planting a stock is strong enough to be grafted, it allows of one year to let the graft grow, and a second to form a sort of head, or to grow into stuff, as the gardeners call it. These stocks may be grafted two or three ways: rapidly growing subjects, intended for standards, are grafted as near the ground as possible; some subjects are, however, grafted where they are to form the head: in either case the union of the graft or scion may be secured the same way, nor does it matter in what way the join is made. The most simple perhaps is, to cut the stock into the form of a wedge, and to split the scion, and cut the inside wood out so as to fit across it like a saddle; this must be done with a sharp knife, so that the bark may not be damaged by bruising. In placing the graft on the stock, if the wood be both of a size, or nearly so, the fit may be perfect; but if the graft, which is mostly the case, be smaller than the stock, it must be placed on one side, so that the bark of the graft or scion on that side shall exactly fit the bark of the stock, for if the scion does not reach half-way across the wedge of the stock, it will, nevertheless, soon cover it all, and even hide the join by its growth; whereas, if the scion were put on in the middle of the stock, so that the barks would not touch, no union could take place. When the stock and scion are made to fit properly, they should be tied firmly together, and covered with proper grafting clay, thickly enough to keep out the air and prevent the wind from drying up the juices before they have time to unite. Another mode of joining these together, is to cut the top of the stock square, take a slice off the side, and then cut the scion or graft with a shoulder, and slope the inside so as to fit on the stock on the side where the slice was taken off. Here, too, the barks must be made to meet on one side, for it will unquestionably fail, unless the barks are made to meet all along one edge. Here the tying and covering with clay must be observed, the same as in the other case, and the diagrams show the way in which the cuts are made. Besides these modes of joining there are many others: one mode is to cut the end of the stock into a long slope, and the graft or scion into a similar sloping form; these two slopes being made to fit, it only remains to cut a slit in each slope in such position that the tongues formed by the cuts will tuck into one another, and bring the slopes together with a good splice: this tied and clayed as before mentioned, will secure a good union. To sum up the various modes of grafting, it matters not how the join is formed so that it be neatly fitted, the two firmly tied, and the air well kept out by the clay. Supposing this to be joined near the ground, the graft must be watched, and only the strongest bud be allowed to grow up: this should be encouraged to grow straight until it is tall enough for the trunk of a standard. All this time, the side or lateral shoots must be removed, except the top four or five, and as new ones come at the top the bottom ones are to be removed, so that there shall not be more than the half-dozen branches when the trunk shall have attained the height it is intended to be; these half-dozen shoots are then allowed to form the head; of which, however, we shall speak at a future time, when, after mentioning the various modes of grafting, we give lists of the best stocks on which to graft all the leading subjects.





POTATO PLANTING.

No one who has been a reader of the Horticultural and Agricultural periodicals of the last two or three years can otherwise but feel astonished at the oft-repeated complaints and outcry, making from all quarters, about great failures in the crops of that useful esculent, the potato. Many people indeed, both producers and consumers, have become alarmed with the somewhat prevalent opinion that the potato is fast and hopelessly degenerating,—getting tired of the land,—unable to live on it; having exhausted it of the elements, the chemical ingredients, the primordial substances, necessary for its proper development, &c. &c. There may be some truth in the idea, but certainly not so much as people imagine; and, although there were, we ought not altogether to despair, as undoubtedly Chemistry could inform us what these principles are, and how we could again add them to the exhausted soil. But I, for one, am inclined to believe,—and I ground my belief on practice,—that the soil and the tribes are not so much to blame, or so far wrong, as the modes of culture and of storing the crop. I am not going to enter upon the field of general culture, as at present practised, any further than to ask your readers if, from their own practice or observation, they do not know that the present practice is to plant the potatoes in rows so contiguous to each other that, when the plants come to bloom, or begin to form their tubers, the shaws are so closely met that the field, or plot, looks close, smooth, and even, as a clover field; air and sunshine are excluded, and, consequently, the formation of healthy tubers is prevented. Or, if it were possible that healthy tubers could be produced by such *over-close* culture, the mode of storing would spoil them. To throw them roughly, and in large quantities, into pits or houses, may, perhaps, do well enough for potatoes to be used for consumption, but it is a very wrong way to keep or treat potatoes meant for planting. In saying this, I use no conjectural assertion: every one may have observed how freely tubers left in the ground over winter (provided they have had sufficient soil over them to keep out the frost) spring up in proper season; while the main crop, having been stored away in large quantities, upon being planted, grow but indifferently. This, then, being the general practice, and what I call a wrong one, it behoves me now to say something about what I may think a right one. Fortunately that can be done in a few words; as there is no mystery nor complicated speculations connected with such a process. It is only necessary, in the first place, to select, at lifting time, for next year's sets, good clear medium-sized tubers, having prominent, but not over-sunken, eyes: handle the tubers carefully; taking good heed not to bruise them; and, in storing them away, do so in such a manner and situation that they will neither *sweat* nor *shrivel*, and where frost will not reach them: for garden purposes, I store them away among dry sand, in two-bushel hampers. The second requisite is to have the ground well wrought and in good condition ere you attempt planting in spring; which must be done in rows four and a half feet to six feet apart, according to kind. My own practice in garden-planting is to form trenches six inches deep and eighteen inches wide, (five feet apart from centre to centre,) in which I place a depth of three inches of *well-spent*, but upon no account *rank*, dung; over which I plant my sets, these being either whole tubers, if below the medium size, or cuts of larger ones, *cut only the day I plant them, and well dusted with flour of lime* immediately they are cut. (It is a great and fatal error to allow the sets either to shrivel previous to setting, or to plant them fresh cut without dusting them with lime.) Then I cover them with three inches of soil, and as the potatoes advance in growth, I keep earthing them up (celery fashion) until the centre of the spaces between the rows becomes a hollow instead of being a height. If possible I never allow my potatoes to expend their strength in producing premature and consequently useless growths. I would rather—could I not keep them cool and backward enough out of the ground—plant them very early.

Although I have them planted in wide-apart rows, I plant them close in the rows, four to six inches being my common distance; consequently I have as great a quantity, and of better quality, per acre, as I should have by the ordinary close-planting mode.

By such a mode of culture, I have repeatedly had the shy-bearing ash-leaved kidney early yield me, at an average, an imperial peck per each four shaws or plants.

John McDonald, C.M.C. H.S.

LANDSCAPE GARDENING.

EARLY ENGLISH STYLE.

This is comparatively a new term, at least a new title, among us. When I was a boy, ground workmen were common, and they were chiefly nurserymen; who, when a nobleman or gentleman wished to have a bit of dressed ground for flowers and shrubs, near his house, as a nurseryman, found both labour and plants, and likewise gave the plan and formed the walks.

During the turbulent times, when the sovereign and bold barons of this country were often at variance, or the barons with each other, every country residence was a castle, or fortified either by deep moats or lofty walls. When better government and more peaceful times arrived, these domestic defences became useless, and were gradually demolished and cleared away. This clearing away of the old defences happening simultaneously, occasioned a great demand for such ground workmen; and in the midst of their levelling operations, various schemes were devised for laying out and occupying the ground which had been levelled. Italian and Dutch gardening had been admired by travellers, who had visited those countries, and on their return spoke so highly of their geometrical flower-gardens and tapiary work, that many imitations of them were made in this country, especially about royal and noble palaces. It became, indeed, fashionable to surround country-houses with rectangular gardens and right-lined beds, borders, avenues, &c., as is shown in the gardens of Hampton Court, Kensington, and other places built in the same reign. Soon afterwards, however, the national taste in gardening underwent a total change. Dutch gardening, with its right lines and its rectangular dispositions, were all condemned as unnatural and trifling; and irregular forms bounded by waving or curved outlines, became the fashion. This style, from its general adoption in the country, has been called the English, as opposed to the Dutch and Italian styles: and so much has it been approved, that almost all the ornamental scenery, which has been formed during the last hundred years, has been laid out in the English style. The opportunities afforded for the display of this style of gardening were either in the improvement of old places, or in forming those which were entirely new. In the improvement of old residences, the house generally underwent a thorough repair, and probably considerable alterations, both within and without, under the directions of some celebrated architect. To fall in with the then reigning taste the architect would probably advise the stables, laundry, and kitchen-garden to be removed to some distance away from the mansion. When these arrangements were completed, the ground workman was called in to do the levelling—to trace the requisite lines of roads and walks, and to do the necessary planting. The grand endeavour of both the architect and ground workman at that period, say about 1750, was to set the house upon a naked lawn; for all the outworks, whether terraces, walls, or offices, were accounted eyesores, and consequently were all cleared away. And so absolutely necessary was this surrounding platform of turf deemed, as adding to the beauty of the house, and giving perfect freedom of view from every window, that access to the kitchen door, for servants and tradespeople, was often subterranean. If trees, however ancient, encroached too near the house, or if a venerable avenue led to it, they were instantly condemned and removed. The boundary of the park was, perhaps, enlarged, and all hedge and ditch fences within the same were grubbed and levelled; and if any ploughed field was visible from the windows, that was laid down to grass. If any single trees stood in the hedge-rows, some of them were preserved, and to them were added various-sized clumps of forest trees, as the taste or skill of the designer might think proper; and if a new approach to the house was required, he traced out, and formed that also. Forming a gravel walk from the house to the kitchen-garden was also confided to him, and which he led in the most convenient line, and usually between two borders of trees and shrubs, parted from the park by a hedge and ditch, or some other kind of fence. He also fixed the site of the kitchen-garden—its extent and necessary buildings, as required by the proprietor.

While this mode or fashion of improving old places existed, many ridiculous things were executed by men of no taste or ability, as well in the management of water, as in their incongruous combinations of shrubs and trees. Among the herd of these ground workmen, there rose up one who soon earned for himself golden opinions of a great majority of the nobility and gentry of this country. This was the famous L. Brown, Esq., royal gardener at Hampton Court. He was a self-taught genius: not indeed for his refined taste as a landscape gardener, but for his extensive and accurate knowledge of the most judicious arrangement of the various divisions of a country residence, whether on a small or on the largest scale. He was long the leader of his class of improvers, and had many imitators; so that the business became at last a distinct profession.

About this time the beauties of landscape began to be studied by every well-informed mind, and the art of laying out ground was discussed in every genteel company: and when the lately created scenery of British parks was compared with the painted landscapes of the old masters, the disparity was so evident that a conclusion was soon come to,—namely, that no man could ever be capable of forming real landscape, who was ignorant of the principles of landscape painting. As soon as this impression became general, a thousand faults were seen in many of Brown's works. The keenest satire and most virulent abuse were levelled against him, both in prose and verse; and it appeared to many competent judges, that the profession of ground workmanship ought to take a higher station among the arts, and be rescued from the illiterate hands that then practised it, and be transferred to a superior order of men, who by classical education, and a study of the principles of painting, and beauties of sylvan scenery, would be competent to establish the true character of the English style, and purify it from the blemishes which had been introduced by Brown and his followers.

The most prominent fault of Brown's improvements was his endeavour to make every thing, especially the ground, as *smooth* as possible; banishing all undergrowths; introducing a profusion of round compact clumps over all the lawn; and surrounding the whole park with a narrow belt of plantation, including a ride or drive. His plantations were chiefly composed of beech and larch, planted in very close order, with a sprinkling of Scotch fir. For groups or single trees, he preferred the fir, horse-chestnut, sycamore, and lime; and for open groves, he chose the oak and elm. He disallowed all undergrowths, so that in a few years his belts and clumps became naked at bottom, and mere assemblages of bare poles; an accident which he did not foresee, and which could have only been prevented by a liberal allowance of holly and thorns. It is probable, however, that Brown left proper orders, that the plantations should be gradually thinned: which, if this was neglected, as it often appeared to be, the fault of compactness cannot fairly be laid to his charge.

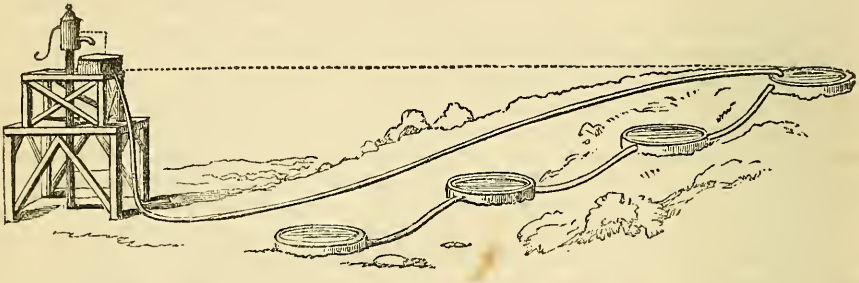
The call for more talented and ingenious men in the profession of groundwork called forth several after the death of Mr. Brown. Some of those had been his foremen, and succeeded to finish what was begun by Brown himself. But the most eminent of his successors was the celebrated Mr. Repton, who was a gentleman by birth and education; greatly superior to Brown as an artist, and as a man of the most refined taste; but inferior as a practical ground workman. Mr. Repton was very generally employed, and in many places which had been laid out and completed by Brown. In those places Mr. Repton had little else to do but to lighten some of the masses of planting, and, especially, of the Scotch fir and larch, which had given a spotty character to the woods, which was not intended. He at the same time stood forward as the champion of Brown, and his system, against the published attacks of Messrs. Knight and Price, both talented men and powerful writers. It was amusing to observe in reading what passed in this controversy, that the then gentlemen were all enamoured of fine paintings, and all were agreed that the principles of the painter, and the landscape gardener, were the same; each, they said, would endeavour to produce the same effects: and it was insisted on by Mr. Repton's opponents, that it was equally in the gardener's, as in the painter's power to make as fine pictures. Mr. Repton, who had had some experience in his attempts to produce immediate effect, denied this position, unless, as he said, the gardener was employed in the natural forests of America, or any other well-wooded country, because there his task would be only to clear away. He could clear his lawns, open his vistas and glades, and preserve the most beautiful or picturesque single trees, which together would form the most pleasing combinations. But in a naked country, as many of our British parks were, before they were planted, it is impossible to give, within a few years, those marks of antiquity and accident, which a painter can lay upon his canvass in an instant.

Here the contest ended: the two accomplished amateurs continued to condemn the style introduced by Brown, and Mr. Repton insisted that that system, faulty as it was in several respects, is, nevertheless, a good foundation, whence the most interesting scenery may accrue in the course of years.

In the course of Mr. Repton's practice, he saw the bold and naked appearance of many parks, in consequence of their want of undergrowths. To remedy this, he directed hawthorn and holly bushes to be profusely planted at the base of single trees, round the margins of groups, or to mask any object offensive to the eye. He also had often to alter awkward and unnecessary bends of roads and walks; and moreover, suggested many improvements of the buildings and prospects belonging to the places where he was employed.

At many of the places he visited professionally, he had to complain of the rude opposition he met with from the gardeners, and ignorant interfering friends of the proprietor, who seemed to take pleasure in checking, and throwing cold water on everything he proposed. Such a complaint said very little for the civility of the servants, or for the power and influence of the master in those days. Happily, such rude opposition and want of courtesy is not likely to be shown by the present race of gardeners, who are now as well acquainted with the rules of civility, as they are with the rules of their art.

Since the death of Mr. Repton, there has not much been done in the business of landscape gardening; nor has any great change taken place in public opinion concerning its principles. A son of Mr. Repton followed the profession; and two or three other persons offered their services as landscape gardeners, and who have been variously, though not constantly employed. JAS. MAIN.



IRRIGATION.—THE ELEVATED PUMP.

There is hardly any operation in a garden more costly than watering, and less seems to have been done towards lessening this expense by a proper outlay at first, than has been done in respect to any other important department. It is no uncommon thing to see a dozen men carrying water about on barrows, from place to place, consuming infinitely more time in wheeling it to the quarter it is wanted, than they do in using it when there; and the wages of the extra hands required for this exceed belief. Well-conducted gardens have indeed wells at different parts of the ground, but even here the water has to be lifted or pumped. The remedy for the evil can only be found in tanks placed at such distances as shall render them handy, and then contrive some means of filling them. The principal object to attend to, is to place one of these tanks on the highest part of the ground; this is the only one that need be filled, because by means of an open gutter from that to all the others, such gutter being within two or three inches of the top, so that when full up to that, the water would run away to the next, and so on from one to another, all may be filled from the first. The best way to fill the highest tank is the next consideration. If there be a well near it there is but little difficulty; and the advantage is, that a man can be kept at work there to pump until all are filled. The water by these means is carried from one end of a large concern to the other, and the irrigation is comparatively the work of a few minutes. The water is dipped from the tanks in a moment, and distributed among the plants in an incredibly short time. But if the water happen to be, as it often, indeed most often, is, at the lowest part of the ground, there must be a little contrivance to convey it to the highest. The means are various: there is no difficulty in pumping water from a well thirty feet deep; and whether a pump be used thirty feet above the level ground, or being on the ground, it is thirty feet above the water, the labour is the same. Presuming there is a good supply from a river or pond at the lower end of the ground, half a mile off, it is only necessary to build a stage so high, that the pump may be even with the tank which is on the highest part of the ground; and this pump may be made the means of filling the tank without any more labour than if the pump were close to it. The only necessary apparatus is a tub under the spout of the pump, with a pipe reaching to the ground, and laid on under ground up the hill, and bent upwards, so as to deliver the water at the top of the tank. This pipe should be iron, well secured, and about the same bore as the spout of the pump; the column or straight pipe from the bottom of the tub to the ground, may be a three-inch one; the only labour required here then would be at this pump. We do not pretend to save the trouble of raising the water, but by the means we point out, the labour of carrying it from place to place; and this is frequently three-fourths of the whole. The diagram here given, explains very clearly the contrivance, if contrivance it may be called, by which water may be carried to any distance, and up any height, short of the height of the tub or cistern at the pump itself. The object here is merely to show the plan, founded upon the well-known fact, that water will find its level; and if the pipe and cistern were one hundred feet high, it would feed a tank anything short of its own height, at any distance. Of the manner in which these tanks are made—whether with wood lined with lead, or with bricks lined with cement, or any other kind—whether the pipe be iron or lead, or the reservoir at the pump be a common tub, with a pipe in the bottom, or masonry, or square wood-work, pitched, or lined with lead, are matters of economy which must depend on circumstances. The plan and principle are the same, and the laws which govern the operations are the same; and the plan may be modified and applied twenty different ways, and for as many different purposes, without any difficulty. The diagram is not in correct drawing, nor intended to be, for the pipes would be laid underground, and the tanks may be 100 yards apart.

ORNAMENTAL TIMBER TREES.

There may be trees ornamental in their nature, or useful, and made ornamental from their situation; I propose to treat of those, which being rather out of the common way, may be themselves entitled to the name of ornamental; not that we would disparage the beauty of the British oak, but we should prefer giving the evergreen oak as a specimen of the ornamental; so, though it would be inconsiderate, if not unjust, to refuse the beech a place among ornamental timber trees,—but even here we should mention the purple beech in preference,—nevertheless, all our timber trees are highly ornamental, when they have appropriate localities to grow in, and, perhaps, all deserve a place. Ornamental trees are not considered to be those planted wood fashion, to grow into timber, and be cut down; they are trees planted with an object, calculated to fulfil that object, and not to be cut down or removed until some other subject is ready to take its place, or the object for which it was placed there ceases to require it. All the single trees or select groups in a park, within sight of the mansion, are required to be ornamental, and people have of late years been more than ever sensible to the great advantage of evergreens over deciduous trees. Thus, some of the rapidly growing Pinus families are becoming great favourites, and others are more encouraged. The cedar of Lebanon, which, on its first introduction, appears to have been planted everywhere, and then neglected for years, takes its place among new plantations; and many other trees, long neglected in ornamental planting, are brought into notice. We mention the cedar as a tree planted a good deal about on its introduction; the magnificent specimens seen in hundreds of places, all indicating something like the same age, bespeak this; and the after neglect seems indicated by the great scarcity of others of a smaller size; unless we come down to those of dimensions which indicate the planting to have been within the last thirty or forty years. However, one of the impressions which has existed for some time, that the cedar was a slow-growing tree, is completely got rid of: when they are in favourable soil, they grow handsomely and rapidly, and they will be more than ever used for ornamental timber. It is especially desirable that all trees which are to stand alone, should be of a kind that naturally grow handsome, and where there are many, the more diversity in form and character the better. In introducing the ornamental timber trees grown in England, we shall offer a series of sketches, indicating their character and form under good culture, and we shall comprise in our list all the trees that can be well considered belonging to that class, commencing with the splendid Pinus Deodora, which will appear in our next paper.

SELECT FLOWERS.

THE FUCHSIA.

This favourite, claimed by the florist, but run into all kinds of wild and extravagant coarseness by the introduction of the F. Fulgens, was one of the rarest and best of plants; some of the species are really beautiful, and have long formed one of the leading plants at market: the most beautiful of the varieties being the Globosa, which from its fine habit, abundant bloom, and facility of blooming while small, has long been a favourite with all plant growers. The principal quality of the bloom, and which gave rise to its name, was its globe-like form, the flowers hanging like crimson beads with spherical divisions or marks, until they opened, when they divided into four equal quarters, showing the interior purple corolla like a fold of purple velvet. All that could be wished of this little favourite was that the crimson sepals would expand more, and expose more of the corolla, which is too much concealed to be seen in all its beauty. From this variety was obtained several larger ones, possessing all the beauties of the original, and variously named by the raisers, Globosa Major, Globosa Elegans, &c.—the chief characteristic qualities also of these were similar to those of the smaller kind, and attaining a larger size, growing faster, and looking altogether bolder when flowered, they became the favourites, and perhaps deservedly. The next favourite, perhaps, as to real merit, was the variety called Ricartoni: the flowers not so round before they open, but expanding horizontally, so that the whole of the rich corolla is exposed, and this being of fine dark purple and velvety texture, is very striking. There are no two varieties more beautiful in growth than Globosa Major and Ricartoni, though there are many which form equally agreeable varieties in a collection. The best, perhaps, combining the true properties of the flower, as laid down by authority, is Formosa Elegans. This is more elongated in form before it opens, but the red sepals completely reflex, and when placed on a stage even with the eye, not only expose the whole of the dark corolla, but show the inside instead of the outside of the sepals, which is an advantage, as all sepals of the Fuchsia are brighter inside than outside. If, therefore, they would reflex right back till their points met the stem upwards, like those of the Turk's Cap Lily, they would be still more desirable. Formosa Elegans, as compared with Globosa Major, beats it in reflexing the petals and showing the corolla, but loses a trifle by comparing the form of the unopened flower. As compared with Ricartoni, it beats that in both points, and also in approaching nearer to the Globosa form before the flowers open. All these varieties are handsome because this important quality, the contrast between the colour of the sepals and that of the corolla, is complete. There were many other varieties cultivated, but most of them were comparatively inferior, and some insignificant. The introduction of Fuchsia Fulgens created no small sensation: the flowers were long like a mail guard's old-fashioned tin horn, and hung down at the ends of the branches like a fashionable tassel, but so close together as to prevent their display to advantage, and the foliage was large and coarse. However well the plant was grown there was a meanness about it, but the extraordinary form of the flower made great interest for it, while seeding very freely set every body raising new ones—ninety-nine out of every hundred being infinitely worse than the original: ramping growth, great coarseness, and roughness of the flower, dulness of colour, and total absence of contrast between the corolla and the sepals, distinguished most of them. Fulgens possessed great faults as a show flower: the green never fully left the tips of the sepals, and the corolla was the same colour, so that there was no contrast at all. The long horn-like tube was curious and a bright scarlet: the more they departed from the original the worse they were, for the tube shortened so that the peculiarity which gave the only value it had to the Fulgens was lost, while all the coarseness remained, and in many new sorts which were huddled out at a considerable price. One of the great faults of the original, the green which would not bloom out of the tips, was yet more conspicuous. Few of them at all approached the Globosa shape; fewer, if possible, exhibited a contrast of colour in the corolla; scarcely one improved in the coarseness of the texture, and hardly one equalled the scarlet of the original. But there was to be a break among them, and it was curious: the sepals of some of the new ones were at length produced of a pale colour, indicating, but not approaching a white. Chandleria was the first we saw, though not the first that was shown of the pale indications, and it preserved the Globosa form, but it blooms too much in bunches towards the end of the branches, and does not present sufficient contrast, the sepals being a pale whitish green inclined to flesh colour a little, and the corolla, though too much concealed, being a kind of rose-colour. Enchantress, Tricolor, and Rosea Alba, exhibited pale sepals and rosy corolla, pretty-looking varieties, and much of the same form as some of the old common ones so well known; but Venus Victrix was the best of this tribe: it had sepals approaching white, corolla rich blue purple on opening, but going off to a violet or rosy violet when the bloom has stood long. The faults are the green remaining at the tips of the sepals, and the sepals being narrow and long, and not expanding enough. The habit of the plant is not good, and management is required to make it form a fine object, for the growth is lanky, and unless the branches be stopped young, this variety runs into a long gawky straggling form, bare at the lower part, flowering only partially, and that on the upper portions of the branches. It is, however, a remarkably pretty variety, and will no doubt lead us to many others. The recommendation of novelties by many of the trade, who consider that so long as a plant exhibits some difference it is sufficient, caused a large increase of the sorts in cultivation, and hundreds have been sent out only to be thrown away. We hold it, however, to be necessary that in all new subjects there should be some distinguishing characteristic to render them admissible to good collections, and the distinguishing character ought to be a good one. There was a variety called Cyllindrica, remarkable for its small bright blooms, not a third of an inch long; it was grown for curiosity, but hardly for beauty. The newer one, Cyllindrica Major, is a remarkable variety, the blooms are scarcely half an inch long, the scarlet is intense, the sepals scarcely visible, and the corolla not much more so, the bloom is abundant, the habit fine, and although it does not possess any one of the acknowledged properties of the Fuchsia, it is absolutely necessary from its singularity to form one in any good collection. Queen Victoria is one of the large coarse pale varieties, with a bright orange scarlet corolla; the outside or sepals are flesh-colour, approaching white, with the green not thoroughly bloomed out of them. They do not expand freely, but rather hang close to the corolla, yet opening just enough to show some of the brilliant colour beneath them; it will nevertheless make a bold grand-looking plant when well grown, beating into the background Conspicua Arborea, which was previously one of the favourites, but greatly inferior in the same way; Conspicua Arborea being of a much worse habit, not so striking in colour, and blooming chiefly on the upper ends of the branches. St. Clair, which made more noise in its time than any other, from its being honoured with the sanction of the Horticultural Society, was only one of hundreds that had no real good quality about them, and Exoniensis the one patronized immediately afterwards, may be described as under: Flower large, sepals or petals reflexed, narrow, and red, corolla all exposed, purple when first opened, and going off to a crimson purple after it has been in the air a while. Therefore if a plant could be brought into flower all at once it would look fine for a short time, but become inconspicuous, and too much of a colour afterwards. There are many new ones coming out, but before any of these need be thought of for a young beginner, the following should be obtained.

Globosa.—A small dwarf plant, pendulous habit, small globe-shaped flower of crimson, opening enough to show a purple corolla within, blooming very abundantly at the axils of all the leaves.

Globosa Major.—A similar flower of much larger size, with all the characteristics, plant more robust, habit not so dwarf.

Ricartoni.—Pyramidical growing plant, of fine habit, dark foliage, with a brownish hue, flowers hang in oval drops, and the sepals a bright coral colour, opening quite horizontal, exposing the entire corolla, which is a dark purple, retaining its colour well till it drops or dies.

Formosa Elegans.—Plant of robust habit, flowers crimson, sepals moderately broad, deeply divided and reflexing, or turning up a little to show the inside surface, corolla purple and bloom abundant.

Venus Victrix.—Pale flower, inclining to white, with occasional green tips, opening wide enough to show a bluish purple corolla, plant thin and quick growing, foliage small, and not much of it, inclined to go bare on the lower part of the branches, the corolla turns paler by exposure, and therefore there are to be found pale rosy purple as well as bluish purple corolla at the same time.

Rosea Alba, Tricolor, and Enchantress.—Flowers of the same character, but inferior, the corolla being not so well contrasted with the sepals.

Cyllindrica Major.—A plant of free habit, intensely prolific blossom, flowers tubular, about the size of the common Barberry, not so large as the flowers of Russellia Juncia, but of the most brilliant scarlet, equal to Verbena Milindris, sepals and corolla of the same colour, but forming a pretty object.

Curiosa.—Rosy flower, tubular, half the length of Fulgens, and proportionably small, divisions small, corolla small, and both of intense deep and bright green, abundant bloom, foot-stalks branching and standing out, flowers pendulous and every one flattened; singular, but elegant habit of growth and bloom.

Queen Victoria.—Pale sepals, almost white, flower large but not open, corolla bright scarlet, and though the sepals do not stand well out, the corolla is exposed enough to show the fine contrast; plant of robust habit, and foliage rather bold, but as yet no well-grown specimen has been exhibited.

Fulgens.—Plant robust, foliage very large, blooms at the end of each branch in large bunches, which weigh down the shoot and open in succession, colour scarlet, tipped with green, as if only half bloomed, corolla same colour as the tube, which is two inches long, round, and rather trumpet-shaped at the mouth, though deeply indented.

Corymbiflora.—A still more robust plant, coarser foliage, larger flower, much of the same proportion, but not so bright in colour, grows taller, and has a brownish hue on the leaves and stems as compared with Fulgens.

Exoniensis.—Bold growing plant, crimson flower, sepals reflex, and expose the corolla well; corolla is first crimson purple, but goes off paler, abundant bloomer, free grower, and not a bad habit.

Many others are about to appear; hundreds of others have appeared and disappeared; we have pointed out these as having peculiar distinguishing characters, and having made their noise in the floral world. As any come across us we may be inclined to add them to our list, but the very few we should choose would be comprised in a less number than we have described.

LOW ON LANDED PROPERTY.*

There has been no lack of writers who could tell us what should be done to improve land, and increase the value of estates. We have ourselves given useful lessons on this important subject; but writers of this description, and we include ourselves, remind one of the council of Mice; there was no difficulty in deciding what should be done, the question was, who should do it? A very young mouse would be wise enough to know that if the cat had a bell round her neck, it would give all the mice notice of her approach; but it was far more difficult to get any one to bell the cat. Now Mr. Low, who has in a previous work told us all that should be done by a farm, has, in his present volume, told us what portion should be done by the tenant, and what by the landlord. He has informed us that the cat ought to have a bell round her neck, and more, he has decided who ought to do the job. In other words, besides informing us what should be done for estates, he gives us a proper notion of who ought to do it. As he observes, in the very preface of the work:—

"There are two classes of persons connected with the land of the country, upon each of whom devolves a peculiar set of duties,—the Landowners, who possess the rights of property, and the Tenants, who advance the funds required for cultivation. It is of the first importance that the latter class be duly instructed in the knowledge which their pursuits require; but it must not be forgotten, that the means of applying this knowledge to successful practice, must be primarily supplied by those who enjoy the right of property in the land itself. The tenants must have suitable farms, and buildings, and other appendages necessary for the occupation of these farms; and they must be permitted to possess the land which they are to cultivate, under such conditions as shall insure the safety of the funds which they advance, and afford them the means of employing their labour with advantage."—Pref. p. v.

There is in these few lines "a bit of good truth." The tenant to be induced to invest his money, must have some assurance that he will obtain a corresponding advantage in a return of it in some shape. It is where a tenant feels that every pound he expends he gives to the landlord, that he neglects his farm; and much of the neglect that may be seen all over the country may be traced to the uncertainty in which the tenants are kept by the nature of their tenures, and the hopelessness of deriving any advantage from money actually sunk. This is a truism which none shall dispute; and we wish there were less room to complain than there is upon this subject. Mr. Low, however, goes a little beyond this; and he is not so happy while discussing the question of slave-labour, as when he contents himself with subjects which he evidently understands better; the application of labour without caring how the quantity is performed. The proposition which all his readers understand, is, that there are certain duties which must be done to make the best of an estate, that these should be performed by landlord and tenant; and the author is not far wide of the mark in the portions which he gives to each. It is clear that the land, under good farming, improves; but the tenant is, in too many instances, under great disadvantage; he feels that he is expending his capital on land not his own.

"It is," as Mr. Low says, "the property of another, who, in the end, will profit by all the improvements which the skill of a temporary possessor can make upon it. The manufacturer receives, directly, the profits of his stock in trade; the farmer must share those profits with another, who undergoes no part of the labour and risk; his industry is fettered by conditions imposed upon no other class of traders; and the inconveniences of obtaining returns for a present expenditure more slowly than in any other profession, are frequently aggravated by the uncertainty whether he will ever have the power of recovering the capital advanced. Certain drawbacks must always exist, when a man employs his capital on the property of another, for the use of which he pays a yearly price, not easy to be adjusted with relation to the value of the returns; but these inconveniences must all be greatly increased where insecurity exists with respect to the future, and where the possessor cannot employ his funds in the manner which his interest requires. When we consider the condition of the farmers of the greater part of the British Islands, in certain cases, as in Ireland, oppressed by rents which scarcely any efforts of incessant labour can make good, and which cut off all the means of accumulating funds for the proper culture of the farms; in other cases, as in the midland and southern counties of England, where security of possession is withheld, and where the industry of the farmer is fettered by a mass of useless covenants; in other cases, as in a great part of Scotland, where the farmers are not removed above the condition of the poorer labourers;—we have less cause to wonder at the slow progress which agriculture has made, as compared with other arts, than that so much has been done to add to the produce of the country, and supply the wants of a continually increasing population. There are, indeed, throughout the country, contrasts to this state of things, as in the north of England, and in the southern and a few of the midland counties of Scotland, where leases have been established by custom, and the necessities of the country, in which we find a race of tenantry comparatively exempt from the prejudices of ancient habits, educated, and giving the benefits of education in a yet superior degree to their families, and possessed of funds necessary for the progressive improvement of their farms. The consequences manifest themselves to every eye, in the improved and continually improving condition of the country, in the costly works which are constantly in progress, and in the large produce raised, under all the disadvantages of inferior soils, and a cold and uncertain climate. Even in the best cultivated of these districts, there may be defects, and great ones, to be removed in the relative position of landlords and tenants; but yet tenures have been introduced which give facilities for employing farming capital with some security; and this security, coupled with such conditions of tenure as an intelligent tenantry learn to insist upon, before they will embark capital on another man's property, is sufficient to call forth a race of farmers capable of acquiring knowledge of every kind, and profiting by the lights which the advancing state of the other arts supplies. If British agriculture, then, is subject to the reproach of having lingered behind the arts which have so distinguished the age in which we live, let us not so far mistake the cause, as to ascribe to the indocility of farmers, that which, in truth, has resulted from the circumstances in which they have been placed."—Pp. 7, 8.

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* On Landed Property, and the Economy of Estates. By David Low, Esq., F.R.S.E. London: Longman, Brown, Green, and Longmans. 1844.

There can be no mistake about Mr. Low's notion that farmers have been, in too many cases, placed under great disadvantages; we fully subscribe to the author's views in many points, and especially do we agree that—

"The essential conditions required to establish fitting relations between the owners of land, and those who employ their capital in cultivating it, may be said to be:—1st, Security of possession; 2d, Equitable rents; 3d, Suitable conditions with respect to the methods of culture and general management; and, 4th, An adequate provision by the landlord for the fixed capital invested in buildings, enclosures, and other necessary appendages of the farm."—P. 8.

There is no gainsaying this, although the expectations of farmers may be easily raised beyond the chance of being realized. Nor do we think that the return of a portion of rents, which at the best is a sort of gift, or charity, which sits but ill upon the independent yeoman, is an indication of a proper relation between landlord and tenant in the original contract; as Mr. Low says—

"It is common to hear of reductions of rent, as 10, 15, or 20 per cent. made by proprietors at their audit-days, and announced in newspapers, and otherwise, as acts of great liberality. But bounties in this form are nearly useless to the tenant. The necessity, where it exists, of making little abatements of his kind, should lead us to the conclusion that an estate is under bad management. The rent at which land is let should be such that no temporary bounties of this kind can be needed. The tenant who takes land, and the landlord who lets it, should so adjust the rent that the tenant shall be able to bear the pressure of deficient crops, or of low prices arising from favourable ones; and no prudent man ought to contract for a rent which will not allow him to meet that contingency of his trade which arises from a fluctuation in the amount and price of his commodities."—P. 16.

This is hitting the right nail on the head; and, by the way, this leads us to a consideration of newspaper paragraphs, which always follow such reductions. One Lord Benevolent reduces his rents 10 per cent. at an audit, and the next year he reduces them 10 per cent. more; and even some go to the length of reducing a third 10 per cent., and the local papers are provided with the announcement that this third reduction makes no less than 30 per cent. Another, however, reduces his rents 25 per cent. at once, and we hear no more of it. Now, the difference between 30 per cent. taken off at three different times, and 25 per cent. taken off at once, is small. The first reduction upon a rental of a hundred pounds, would reduce it to ninety. The second 10 per cent., therefore, only reduced the rent nine pounds; and the third being upon eighty-one pounds, only reduced it eight pounds; whereas the one who reduced 25 per cent. at once, took off, within two guineas, of the one who appeared a benefactor to the amount of 30 per cent. However, when rents are higher than tenants ought to pay, they should be at once reduced to a proper amount; for there should be no obligations between landlord and tenant, but that of quiet possession on the one hand, and the payment of rent and acting up to covenants on the other. This leads us to the consideration of leases, to which Mr. Low has devoted a whole chapter, in which he discusses, with great fairness, the respective interests of landlord and tenant. But, however the author may decry the lagging progress of farming, as compared with other sciences in this country, he lays open the causes so clearly in the general treatment of tenants, that we are more inclined to marvel how it progresses at all; and were it not for honourable exceptions among great landed proprietors, advance it could not. In speaking of leases, and the necessity of granting them to ensure alike the welfare of landlord, tenant, and land, the author sets the proper length at twenty years, and considers it the least period that would enable a farmer to do justice to the land and to himself. He cites cases of large farms on which thrashing-machines have been erected, liming and draining performed, and other improvements made, which cost a great outlay, the benefit of which can only be received in profits. He cites, also, facts which are incontrovertible. The necessity of adopting a rotation of crops, which will be four, five, six, or even more years, coming round, and the annual results of which would prove very different, is mentioned as one reason for prolonged secure occupation; yet, strange as it may appear, but few farmers, taking the whole country through, can boast of a tenancy that would secure them any adequate return for a pound they lay out. Whether this proceeds from the fact, that many farmers have arisen from the plough-tail, and have less knowledge of the world than mechanics, we know not; but while one of the former class will invest his all, and more than all, on a farm, as a tenant at will, the veriest blockhead that ever cut a cork, or made a shoe, would refuse even to repair a house, unless his landlord granted a lease. However, Mr. Low has placed this matter upon a proper footing, and proves no mean advocate for the rights of the British husbandman. Mr. Low is an advocate for money rents, fixed so as to afford the tenant a fair prospect of full remuneration for his skill and industry; and the greater part of the chapter is occupied with what should be the conditions as to cropping to which the covenants of the lease should subject the tenant. We have then, successively, chapters on the Buildings of a Farm, Enclosures, Drains, Watered Meadows, Embankments, Roads, &c., in all of which Mr. Low's practical knowledge appears. The tenth chapter is devoted to geology, and the mineral productions which may be possibly found thereon; but the eleventh chapter is yet more interesting, and brings to a subject of the highest importance to the landholders and the farmer. The former is deeply interested in the growth of timber; the latter is still more deeply affected, if there be too much of it. Mr. Low begins by showing the advantage of cultivating timber, and gives a sort of treatise on the subject. He says—

"Forest trees, with respect to their natural characters and uses, may be divided into two general classes; 1st, The Coniferæ, so named from generally bearing their seeds in cones; and, 2dly, The Amentaceæ, and other families, popularly denominated hardwood.

"The cone-bearing trees are found from the hottest regions of the Indian Archipelago, to the climates of the Arctic regions; but more abundantly in the colder than in the warmer latitudes. There are two great divisions of them, the Auracarias, and other allied genera, growing chiefly within the tropics; and those with which we are conversant in the higher latitudes, as the Wild Pine, the Spruce Fir, the Larch. Those of the latter division are amongst the most robust of trees, and are those only which interest us in this country, as the subjects of economical culture. Their leaves are narrow and needle-shaped, sometimes proceeding in tufts of two or more from a single sheath, as in the wild pine, the Corsican pine, and other species of Pinus; and sometimes the leaves grow singly from the branch, as in the group termed Firs, such as in the Norway spruce, the silver fir, and others. The most of them retain their leaves throughout the year, as the wild pine, and the spruce; but a few of them shed them at the fall, as the larch. They grow for the most part erect and tall, the smaller branches being subordinate to the main trunk, and hence they yield, more quickly than other kinds of trees, a quantity of larger timber, fit for the uses of carpentry. When cut over near the ground, the individual dies, whereas the hardwood kinds are mostly capable of putting forth new shoots. They abound in resinous secretions, as turpentine; and by heat they yield tar and other products useful in the arts. They are frequently termed resinous trees, in contradistinction to the hardwood species, which do not produce resins, but gums and other principles. The bark yields tannin, and the seeds of several of them are edible.

"The other great division of forest trees consists of Amentaceæ, as the Oak, the Chestnut, the Beech; of the Olive family, as the Ash; of the Leguminous or podded plants, as the Laburnum; of the Rose family, as the Hawthorn, the Cherry, the Apple; and of other tribes. Their leaves are flat and expanded, sometimes retained throughout the year, as in the holly, and evergreen oak, but for the most part falling off at the close of autumn, when the vegetation of the season has been completed. They propagate themselves by their seeds, which are sometimes contained in a nut, as in the oak, the beech, the chestnut; or in a stony covering, surrounded by a juicy pulp, as in the hawthorn, the cherry, the plum; sometimes in a leathery pod, as in the laburnum, and other species of the leguminous family; and sometimes in capsules of different consistence and forms, as in the ash, the elm, the willow. But many of the species likewise tend to propagate themselves by throwing up suckers or young shoots from the roots, which they extend along the ground. When cut over above the root, they generally tend to send forth new shoots, whereas nearly all the coniferæ perish when cut down. They present far more varied forms of life than the coniferæ, and though generally deprived of their foliage in winter, afford an ample compensation for the temporary loss, when their vernal foliage is called forth, and expanded by the heat of summer."—Pp. 522—524.

He then proceeds further, with a very sound series of directions for raising, planting, thinning, pruning, and so forth; all of which are excellent in their way, and while confined to the making of woods and forests, give the farmer no concern beyond forming a sort of rendezvous for foxes, and other disagreeable visiters. But we should like to have taken Mr. Low round a few farms which are half destroyed by monstrous and decaying trees in hedge-rows, occupying large portions of the ground, impoverishing the land for a considerable distance, lessening and damaging the crops, and doing no earthly good. Here we should like to mark for the woodman's axe, or for the exercise of the timber-thrower's ingenuity, first, every tree that had arrived at perfection; secondly, every one that was past it, and on its way to decay; thirdly, every one that was nearer than seventy-five feet to another: then we have no objection to saying that the farmer should plant and preserve, at seventy-five feet apart, timber-trees along all the hedge-rows; and when the landlord cut one down, it might be replaced with another; nay, we should not care if young trees were planted between the old ones, seven years before the old ones were to be cut, that there might still be rising timber when the matured were removed; but to see, as we do frequently, acres of produce destroyed for want of sun, and air, and moisture, which rows of timber prevent from reaching crops, is enough to break the heart as well as the back of any tenant. Mr. Low's book, however, will do much good among the landed interest, and though we do not enter heart and hand with him into some of his speculations, we should like to see the work in the hands of every landlord and tenant, that they might both learn their respective duties, and profit by the advice of a practical man.

Of the manner in which Mr. Low describes the trees recommended for planting, the following account of one of the most handsome sorts, Pinus Cembra, and one of the most useful, the Walnut, will give a good idea:—

"The Cembran Pine, (*Pinus Cembra,*) is an inhabitant of the highest Alps of Switzerland, and other mountains of Central Europe, and extends to the high lands of Northern Asia, as far eastward as the mouth of the river Lena. It is one of the hardiest, if not the hardiest, of all the pines proper to the northern part of the Old Continent, growing beyond the region of the wild pine, and at an altitude at which the wild pine becomes a bush. It rises with a tall rigid stem, with slender branches, proceeding from it in distant whorls, and gradually shortening from the base to the summit, fitting it to bear the masses of frozen snow with which it is often loaded. Its leaves exhibit the singular property of twining around the buds, as if to protect them from the cold.

"This hardy species was introduced into Britain from the Alps of Switzerland about a century ago; but, although examples of it are to be found in various parts of England, it has never become a favourite tree of planters. It grows with comparative slowness; and its stiff stem, its distant branches, and pale green leaves, are disliked by many. But the species is suited, by all its characters, to a region of barrenness and intense cold, and may present to us the means of clothing the rugged summits of our higher mountains with wood, where the native pine would fail. Further, the wood of the Cembra is good and durable. It is fine in the grain, yet pliable to the tool, fitted for beams and joiners' work, and even for being turned upon the lathe. It is believed that some of the finest of the Riga deals are derived from the wood of this species; so that, both on account of its hardiness and economical value, the Cembran Pine merits the attention of the planters of this country."—P. 550.

"The Walnut, (*Juglans Regia,*) is a tree celebrated from the earliest times for its wood, its fruits, and its oil. It is a native of the countries of the Caspian and Euxine Seas; extending from Persia to the Indus, and to the northern provinces of China. It was familiar to the Greeks and Romans, from whose rustic writers we derive accounts of its culture and uses. It extended with the conquests of the Roman people, to Spain, Gaul, and other provinces of the empire, including, it must be believed, the Island of Britain.

"The Walnut is a tree of the larger class, with a thick trunk, a light and furrowed bark, with wide-spreading arms. Its leaves are pennated or winged like those of the ash, and of a yellowish-green colour, and emit, when rubbed, a fine aromatic odour. The fruit is a green oval-shaped drupe, containing a hard nut, of which the kernel is contained in a pellicle, and divided by a thin partition. In autumn, the husk or external covering softens, and permits the nut to fall or be readily shaken from the tree. The kernel is eaten either in its fresh or dried state, and yields, by expression, an oil little inferior to that of the olive, and, for certain of its uses, superior.

"The Walnut is extensively cultivated in all the warmer and more temperate climates of Europe. In Italy, Spain, France, and Germany, even to the limits of the region of the vine, it is everywhere to be seen in the orchards, by the waysides, and mingled with the other forest and fruit trees of the country. But as we approach to the climates where it ceases to mature its fruits, it continually diminishes in numbers, until it disappears from cultivation. In the north of France, and in the southern and even midland counties of England, it grows freely, and produces fruits abundantly, but further to the north, it does so only partially and imperfectly. In the latitude of Edinburgh, it scarcely forms its fruits, and only ripens them when protected by walls, and in the warmest summers; but in favourable localities it will grow, nay, keep pace with the more robust trees of the country, even to the extreme north of Scotland.

"Besides its fruit and its oil, the Walnut yields timber greatly valued for certain uses. The wood is light, but close-grained, and of a deep-brown colour, streaked with darker and lighter shades. It is brittle in the direction of its length, and, therefore, unsuited to beams; but it is tough in the lateral direction of its fibres, and does not readily split. It yields freely to the tool, receives a fine polish, and, when duly seasoned, does not shrink or warp. Hence it is well suited for wainscoting, panelling, and cabinet-work of any kind; for which purpose, it was everywhere employed on the continent of Europe, and was so extensively in England before the introduction of mahogany and other woods of the warmer countries. With us it is now chiefly employed for the stocks of guns; for which purpose, its lightness, smoothness, and resistance to splintering, fit it beyond any kind of wood.

"The Walnut is somewhat tender in the early stages of its growth, and apt to suffer in its young shoots from the frosts of spring. But yet, with due care, it may be reared in all the situations suited to it, and will grow as quickly as most other trees. Like the oak, it affects a somewhat aluminous soil, but will not grow in the colder tills retentive of water. It is well suited to calcareous grounds, and grows with peculiar luxuriance in clays incumbent on chalk. It strikes its roots deeply into the earth, and will penetrate the chinks and fissures of rocks to an amazing distance. Even in the young state, its tap root is so large that the plant suffers a considerable retardation of growth by transplantation. It may, therefore, be beneficially raised from the nuts in the ground which it is to occupy; to which end a little space should be trenched and limed, and a few nuts covered in, one of the most vigorous of the growing plants being ultimately preserved. But the Walnut may likewise be cultivated with success by the common means in the nursery, care being merely taken that the roots be not unnecessarily mutilated in the process of transplanting, and that the plants be removed to their final destination before they have reached too great a size. When the Walnut is cultivated in plantations or orchards for its fruit, it is propagated by grafting, the varieties being selected which produce the finest fruits, just as in the case of the apple, the pear, and other fruit-bearing trees.

"In the midland and southern counties of England, the Walnut was once extensively propagated in groves, parks, and hedgerows: and there are yet many trees planted from time to time, or preserved in the beautiful parks of the opulent. But the immense consumption of the wood for the stocks of fire-arms in the war, during the partial interruption of our intercourse with other countries, produced a great diminution in the number of the finer Walnut trees in England. The price was at one time so great, that several hundred pounds might have sometimes been obtained for a single tree; but, at length, the wood of the American Walnuts, which is not greatly inferior to that of Europe, began to be imported in quantity; and it was found, likewise, that walnut-wood might be procured in abundance from the Russian dominions on the Black Sea.

"Although the wood of the Walnut does not now possess the great pecuniary value which circumstances once gave it, yet still it is a profitable wood to grow, high prices being given by the gun-makers of Birmingham and other places, for walnut-wood of English growth. But besides the prospect of a profitable return, the Walnut recommends itself to the taste of the planter by its own natural beauty. Its leaves indeed, like those of the ash, are tardy in appearing in spring, and are amongst the first to fall when autumn arrives; but the form of the tree is graceful, the colour of the foliage is soft and pleasing; and we can scarcely fail to associate with the living Walnut some feelings connected with its many uses, its classical fame, and the bright and sunny climes from which we have derived it."—Pp. 594—596.

In this way he goes through all the trees that can be made useful or ornamental, growing or cut; and perhaps this to the planter will be found the best part of the work: at all events, it will check that headlong practice of planting just what can be planted cheapest, without regard to its use, or chance of success, which has distinguished a good deal of the practice of late years; for it must be confessed, that the kind of timber to be placed on an estate has too often been decided by the lots easiest purchased under the hammer, or cheapest furnished from some nursery stock in the neighbourhood.

NEW PLANTS AND SHRUBS,

INTRODUCED AND MADE KNOWN DURING THE YEAR 1844.

In describing the plants and shrubs that have been brought into notice during the last year, it will, as far as possible, be our object to avoid uninteresting technicalities; and also, to prevent the dissemination of incorrect notions, with reference to the subjects treated of. In order to secure these desirable features, we shall endeavour to use familiar terms or expressions; or else to introduce some explanation in parentheses, when the employing of less common terms seems unavoidable.

ACHIMENES PICTA, *Bentham.* (Pencilled-leaved Achimenes.)—A very handsome plant, when out of flower, owing to the elegant markings of its leaves, which are broadly heart-shaped, or oval, of a beautiful velvety dark surface, caused by the numerous soft hairs with which it is clothed, and marked with fanciful pale-coloured blotches. The plant is of compact, bushy habit; the flowers are produced up the stems, singly from the axils of the leaves; they are tube-shaped; the upper part rich scarlet crimson, and the lower part yellow, spotted and marked in the inside with crimson. It was introduced from Guatemala, by the Horticultural Society, and produces its flowers during the autumn.

ALONA CŒLESTIS, *Lindley.* (Sky-blue Alona.)—This is nearly related to the well-known trailing annual, called Nolana prostrata; one of its obvious differences from that plant consists in its upright and shrubby habit. It is a very handsome-flowered plant, and is deserving of extensive cultivation. The leaves are nearly cylindrical, quite fleshy, and about an inch in length; the flowers resemble those of a Convolvulus or Petunia, both in figure and size, and are of a beautiful soft lavender-blue colour. It appears likely to form a bushy plant about two feet in height, and will grow during winter, under the ordinary treatment of greenhouse plants; it appears, moreover, likely to become adapted for bedding out in summer. It was introduced from Coquimbo, and has flowered in this country for the first time during the present summer. The existence of plants of this character, both in Chili and Peru, has long been known to botanists; and several more, equal to the present subject, remain yet to be introduced.

ANDROMEDA PHYLLIREÆFOLIA, *Hooker.* (Phyllirea-leaved Andromeda.)—A very neat dwarf shrub, introduced from West Florida. It has very dark green oblong leaves, and small bunches of pure snow-white, drooping, pitcher-shaped flowers. It is probably hardy enough to endure a very mild winter in the open air, and will thrive under the treatment usually given to American shrubs.

ANEMONE OBTUSILOBA, *Don.* (Blunt-lobed Wind-flower.)—A hardy alpine, from the mountains of Nepal. It has woolly, palmate, thick leaves, and clusters (umbels) of small, cup-shaped, white flowers, on stalks six inches high. It is the same as A. Govaniana, of Wallich.

ARISTOLOCHIA ORNITHOCEPHALA, *Hooker.* (Bird's-head Birthwort.)—The species of this family have all very singular-formed flowers. The present plant is a large climbing stove shrub, with large, heart-shaped leaves, on long stalks, with a pair of stipules (leafy appendages) at the base of each: the flowers are produced singly from the axils of these leaves, on stalks eight inches or more in length; they consist of three parts:—a large tube or pouch, nearly three inches long, the upper part of which is bent over like a hood, and becomes expanded into two divisions, the upper one narrow, and five inches long; forming, with the pouch, a resemblance to the head and beak of some bird; and the lower one, having a narrow stalk two inches long, and suddenly assuming an elegant, wavy, kidney-shaped outline, four inches long and six broad: the colour of these singular blossoms is a dingy yellow or buff, elegantly marked with numerous deep purple reticulations. It was gathered near Crato, in Brazil.

ASCLEPIAS VESTITA, *Hooker.* (Hairy stemmed Asclepias.)—An herbaceous perennial, from North America, with straight, erect, hairy stems; and opposite, stalkless, leathery, broadly-elliptic leaves; the flower heads are produced on stalks from the side of the leaf stalks, and consist of a dense globular head of greenish yellow flowers. It is a plant of but little beauty, and has hitherto been kept in a greenhouse, where it flowers in October.

Azalea Indica. (The Indian Azalea.)—The following distinct and interesting varieties of these very showy plants, have appeared during the season.

Azalea Indica, Var. exquisita, (of gardens.)—A large flower, thickly spotted with carmine, on a deep pink ground colour, and having an irregular edging of a paler tint, almost white: the flowers are produced in large heads.

Azalea Indica, Var. optima, (of gardens.)—A fine-shaped flower, of good texture, and of a reddish-orange colour, with very distinct spots.

Azalea Indica, Var. splendida, (of gardens.)—A good-shaped flower, of a purple colour, with dark spots.

Azalea Indica, Var. refulgens, (of gardens.)—A very large flower, and a free bloomer: the flowers are rich dark scarlet, not very distinctly spotted.

Azalea Indica, Var. præstantissima, (of gardens.)—The blossoms of this variety are of medium size, of a pale vermilion colour, very distinctly spotted: it is of good form.

Azalea Indica, Var. Carminator, (of gardens.)—A variety of good form and substance, and of a fine dark red or carmine colour.

Azalea Indica, Var. Emmelina, (of gardens.)—A pale red variety, of excellent properties, and flowers of large size.

Azalea Indica, Var. gloriosa, (of gardens.)—A very good variety; colour purple, spotted with red.

Azalea Indica, Var. lateritia pulchra, (of gardens.)—A variety of good properties, and a fine light red colour.

Azalea Indica, Var. Formosa, (of gardens.)—Also a fine variety; colour bright red, and flowers large, and well formed.

Azalea Indica, Var. King of Saxony, (of gardens.)—A very pretty variety, of a light vermilion red, and good form.

Azalea Indica, Var. erecta, (of gardens.)—A very brilliant coloured variety, possessing excellent properties.

Begonia Manicata, *Cels.* (Scaly Begonia.)—This is a very handsome stove species, of a very interesting family, which are deserving of more extensive cultivation, and a greater share of attention than they at present receive: the graceful habit of the flower-stem of this species adds greatly to its beauty. The leaves are broad, roundish, and shining, and are produced on the lower portion of the stem; above them rises, to the height of two feet, the spreading, drooping panicle of delicate pink, three-cornered flowers, which are produced in great profusion. It is remarkable for the curious manicate scales, which are situated on the leaf stalks.

Begonia Acida, *Vellozo.* (Acid Begonia.) The stem of this species is stout and woody; it bears thick fleshy leaves, which are covered with a hoary woolly substance, easily rubbed off; the stem is covered in a similar manner. The flower stalks are nearly a foot long, supporting panicles of clear white flowers, of medium size. It requires a cool stove.

Begonia Papillosa, *Lindley.* (Pimpled Begonia.)—A very luxuriant growing stove plant, with large leaves, very soft to the touch, and densely covered on the under surface with small hairs. The flowers are produced in loose panicles.

Berberis Pallida, *Bentham.* (Pale ash-leaved Berberry.)—This belongs to the pinnated, or ash-leaved section of the genus, which is by some separated as a distinct genus, under the name of Mahonia. It is a fine evergreen shrub, presumed to be hardy, though this has not yet been ascertained. It was found on mountains, near Cardonal and Zimapan, in Mexico, by Mr. Hartweg, by whom it was introduced to the garden of the Horticultural Society. It bears loose open racemes, or spikes, of pale greenish yellow cup-like flowers. In its native country it attains from five to six feet in height.

Bignonia Carolinæ, *Lindley.* (Lady Caroline's Bignonia.)—This plant has been flowered in the collection of the Earl of Ilchester, at Melbury. It is a slender-growing, climbing plant, with pointed heart-shaped leaves, in pairs, on rather long stalks, accompanied each by a tendril: the flowers are produced in panicles (lengthened bunches), and are trumpet-shaped, with five, two-lobed, spreading segments; they are snow-white, and very sweet scented. It is adapted for a green-house or conservatory, flowering in May. It seems well adapted for pot culture.

Buddlea Lindleyana, *Fortune.* (Lindley's Buddlea.)—This plant has been raised in the garden of the Horticultural Society, from seeds sent from Chusan, by Mr. Fortune. He describes it as a handsome small bush. It has smooth, oval, pointed leaves, with the edges serrated (saw-like): the flowers are produced at the ends of the shoots, in dense racemes, or pikes; individually they are tubular, with a spreading mouth, and separated into obtuse segments; they are nearly three-quarters of an inch long, of a rich violet or lilac colour. It will probably be found to be half-hardy.

Ceanothus Thyrsiflorus, *Escholtz.* (Dense-flowered Ceanothus.)—A beautiful shrub, nearly or quite hardy, with evergreen, glossy, oval leaves, and large panicles (clusters) of light blue flowers. In its native situations, in various parts of America, it attains the size of a small tree, and is densely enveloped in bloom at the flowering season: here it manifests an equal disposition to bloom freely. It is also cultivated under the name of C. Divaricatus.

Cereus Crenatus, *Lindley.* (Crenated Torch Thistle.)—At the exhibition in the garden of the Horticultural Society, in May of the present year, this fine plant was exhibited. It has a broad flat stem, with the edges regularly crenated: the flowers are large, about five inches in diameter, white, and deliciously fragrant: in their appearance they rival the well-known night-blooming Cereus; but they have this advantage, that the flowers open by day, and are borne by a plant which does not appear to have a rambling habit. It was sent from Honduras, to Carclew, the seat of Sir C. Lemon, Bart. M.P., and requires to be cultivated in a warm green-house.

Cestrum Aurantiacum, *Lindley.* (Orange-coloured Cestrum.)—A handsome green-house shrub, with smooth, oval, wavy leaves, and spiked panicles of small rich orange-coloured flowers, which are retained a considerable time on the plant. It is a native of Chimalapa, in Guatemala: in this country it flowers during the summer months.

Chabræa Runcinata, *Hooker.* (Changeable-flowered Chabræa.)—This is the Leucheria Runcinata of Don, and the Chabræa Rosea of De Candolle. It is an annual plant, of branching habit, growing to about a foot and a half high, and producing a considerable number of double french white flowers, and runcinate (deeply-lobed, the lobes pointing to the base) leaves: the whole appearance of the plant much resembles that of a plant of the double Senecio, or Groundsel. It was introduced from Chili, and has been grown in the garden of the Royal Botanic Society, and elsewhere, during the present season. It flowers in June.

Chirita Sinensis, *Lindley.* (Chinese Chirita.)—A dwarf tender green-house herbaceous plant, very much resembling a Gloxinia in general habit and appearance. Its ample, oblong, almost oval, hairy leaves are seated close to the soil, and from amongst them arise the flowers, two or three together, on short stems, which just elevate them above the foliage: the flowers are in shape nearly like a Gloxinia, or a Foxglove, of a beautiful soft lilac, with a white throat, and have a very pretty appearance. The plant was introduced from China, by the Horticultural Society; and is said to be of very easy cultivation, in the cool part of a stove.

Clerodendron Infortunatum, *Linnæus.* (Unfortunate Clerodendron.)—Of this noble-looking tribe of plants there are several established favourites at floral exhibitions. They are evergreen shrubs; the present has an erect four-angled stem, and large heart-shaped leaves, bearing on the summit of the shoots a spreading panicle of deep crimson flowers, having long protruding coloured stamens, or thread-like appendages: the flowers are formed of five unequally spreading portions, resembling those of the common garden Azaleas. It was introduced last year, from Ceylon; and has been several times exhibited in bloom during the present year.

Clerodendron Glandulosum, *Lindley.* (Glandular bracted Clerodendron.)—This plant has been grown under the name of C. Speciosissimum. It has large oval leaves, not at all heart-shaped, but appearing as though bitten off at the base; they have but few hairs, and no glands: the heads of scarlet flowers are surrounded by long narrow permanent bracts, which have one or more oval glandular spaces on them; the outer covering (calyx) is not enlarged, but is furnished with long narrow teeth. It is a stove plant, and, together with all the species of this genus, is an exceedingly noble and magnificent-looking plant. In a limited collection, however, the general similarity of character between C. Glandulosum, C. Fallax, C. Squamatum, and C. Infortunatum, would render one of these kinds sufficient.

Clerodendron Fallax, *Lindley.* (Deceitful Clerodendron.)—This is not a new plant, but has been cultivated for some time in our gardens, under the name of C. Squamatum, from which, however, it is found to possess several botanical differences. The large, roundish, heart-shaped leaves are dentated or toothed, like those of C. Infortunatum; they have no glandular scales on their under surface, and the outer coverings (calyx) of the scarlet flowers are small, with five short teeth, instead of being enlarged and divided half their length, into five segments. The flowers are scarlet, as in the two species named above, and in size are intermediate between them. It requires stove heat.

Clitoria Fulgens, *Paxton.* (Bright scarlet Clitoria.)—This is also known as Centrosema Coccinea, under which name the plant has been exhibited during the season. The pea-shaped flowers are borne in axillary clusters; they are of a glowing scarlet, but do not open freely. It requires a warm green-house, and seems adapted for training on a neat trellis, when grown in a pot. It is a native of rocky places, on the Organ mountains of Brazil, whence it was introduced by Messrs. Veitch, of Exeter: it flowers in June.

Coburgia Miniata, *Lindley.* (Vermilion Coburgia.)—A bulbous plant from Peru, with bright green leaves, three feet long, and an inch broad; and a flower scape (stem) rising to the height of three feet, terminated by a cluster of drooping narrow tube-shaped flowers, about two and a half inches long; at first nearly white, but subsequently becoming overspread with the vermilion tint. It has been flowered by Mr. Groom.

Corethrostylis Bracteata, *Endlicher.* (Rosy-armed Corethrostylis.)—This is a Swan River shrub, with scented leaves, and producing a profusion of rosy-coloured flowers. The leaves are heart-shaped, and hairy, on long stalks; and opposite them on the stem are produced the forked spikes, of little starry, pinkish-rose flowers, beneath each of which flowers, a little rosy bract, or small leaf is situated. In native specimens, these bracts are much more highly coloured than they have yet appeared under cultivation. It appears to succeed with the treatment usually given to New Holland plants.

Crinum Variabile, Var. Roseum, *Lindley.* (Rose-coloured changeable Crinum.)—A fine bulbous plant, probably originated from seed, under cultivation. The leaves are long, and bright green, about an inch in width; and the flower stem (scape) is comparatively short, but produces at its summit a cluster of pretty rose-tinted, sweet-smelling flowers, which are rather broad at the extremity, where the six pointed divisions turn back, and gradually narrowing towards the base, form, by their overlapping sides, a funnel-shaped flower, at the end of a comparatively slender-looking tube. It requires a stove.

Cryptandra Suavis, *Lindley.* (Sweet-scented Cryptandra.)—A very neat Swan River bush; forming a pretty green-house plant, with small oblong or oval leaves, on very short stalks, and minute white, drooping, bell-shaped flowers, scattered in profusion over the little side branches; individually the flowers are very insignificant, but their abundance makes ample amends for this. It has another good quality, being "as fragrant as the Hawthorn;" and is altogether worth cultivating where there is room for it. It requires the treatment of Cape Heaths, and flowers in January.

Cuphea Strigillosa, *Humboldt.* (Hairy Cuphea.)—A neat growing stove plant, with heart-shaped oval leaves, of a lively green colour, and tubular flowers, which if grown in a stove are yellowish, but if in a cooler temperature, they are vermilion coloured on the exposed side, and yellow beneath.

Dipladenia Crassinoda, *Alph. De Candolle.* (Knob-jointed Dipladenia.)—This climbing plant is also in cultivation as Echites Carassa. It is of rather slender habit, and apparently well adapted for pot culture. The leaves are ovately lance-shaped, and shining; and the flowers, of the funnel-shape peculiar to the genus, are of a deep rosy pink, with the throat orange-coloured. It has been very recently flowered for the first time in this country, by R. G. Loraine, Esq., of Carshalton, and proves to be a most beautiful species. It is a native of Rio de Janeiro, and is the Echites Crassinoda of Mr. Gardner.

Echinocactus Pentlandi, *Hooker.* (Red-flowered Hedgehog-Cactus.)—A small, nearly globular, plant, depressed at top, and marked with about twelve furrows, and as many obtuse ribs. The flowers are large for the size of the plant, and spring from the sides, on the ribs; they are very pretty, of a deep rose colour. The history of the plant is obscure.

Epacris Autumnale. Autumnal Epacris (of gardens.)—This, evidently of hybrid extraction, is known also as E. Cunninghami, and E. Refulgens. The upright strong-growing stems are thickly set with the small oval leaves, and, during the winter months, are well furnished with tubular crimson flowers, spreading at the extremity into five obtuse segments, the face of which is pure white. Its parentage is most probably between E. Grandiflora, and E. Impressa.

Epacris Miniata, *Lindley.* (Vermilion flowered Epacris.)—This is a very pretty green-house plant, resembling in habit and general appearance the old E. Grandiflora. It has small rigid heart-shaped leaves, seated closely about the stem, (sessile); and throughout the greater part of its length it produces long, narrow, tubular flowers, of a fine light scarlet, with the end of the tube pure white. In E. Grandiflora, the colours are rosy crimson, and white. It forms a neat compact bush, and requires the same treatment, as its congener.

Erica Eassoniana (of gardens.)—A hybrid possessing much the character of the varieties of E. Ampullacea. Its flowers are large, tube shaped, a little inflated, and of a very light colour; they are very abundantly produced. It has been exhibited during the season, by Mr. Jackson of Kingston.

Erica Tricolor, Var. Pallida, (of gardens.)—A very pale-flowered variety of E. Tricolor, which is one of the best of the family: the habit of the plant is neat, and the blossoms are nearly white. It was exhibited in bloom at the Royal Botanic Society's exhibition in July 1844.

Erica Longiflora, Var. Floribunda, (of gardens.)—A splendid variety, with long tube-shaped, rather incurved, yellowish blossoms, and the habit of E. Vestita.

Erica Vestita, Var. Albida, (of gardens.)—A most lovely and delicate variety of the old E. Vestita. The flowers are white, just tinted with flesh colour.

Erica Murrayana, *Turnbull.* (Mr. Murray's Heath.)—This is a handsome hybrid, raised between Erica Aristata minor, and E.

Vestita coccinea, with the former of which it accords in foliage and manner of growth, while the flowers somewhat resemble the latter, both in form and colour, and are produced in whorled heads at the ends of the shoots. It appears to flower in the autumn and winter months, and has manifested a disposition to bloom in an exceedingly dwarf state.

Franciscea Hydrangeiformis, *Pohl.* (Hydrangea-like Franciscea.)—A coarse-looking stove plant, with large, rough, oblong-oval leaves: the flowers are produced in loose heads, at the ends of the shoots, and resemble those of the old F. Uniflora, but are not scented, as in that species. It is a native of Brazil.

Franciscea Pohliana, *Hooker.* (Pohl's Franciscea.)—A small upright, branching shrub, with purplish stems, and elliptic lance-shaped leaves, covered with hairs on both their surfaces; the flowers are in loose terminal heads, roundish, somewhat resembling those of the small Periwinkle, and of a pale violet-colour. It requires the temperature of the stove.

Gesnera Gardneri, *Hooker.* (Mr. Gardner's Gesnera.)—An erect-growing herbaceous stove plant, introduced from the Organ Mountains of Brazil. It has opposite, fleshy, elliptical pointed leaves, strongly serrated, rather downy, and borne on short stalks: the flowers are produced singly in the axils; they are about an inch long, tubular, with five short, round, spreading segments, slightly downy, and of a handsome light scarlet-colour. The leaves, which are said to have some resemblance to those of a narrow-leaved elm, are marked with prominent veins, beneath.

Gloxinia Speciosa, Var. Magnifica. *Lindley.*—This variety, and the three following ones, have been raised along with many others, from the seeds of G. Speciosa rubra, fertilized with Sinningia Guttata, by Mr. Carton, gardener at Sion-house. The colour of the flower is a deep flesh-colour, or pink, with a pink tube, and white throat; and it is said to possess a strong and erect habit of growth.

Gloxinia Speciosa, Var. Insignis. *Lindley.*—This variety has a pink tube, with the spreading segments, or limb, nearly white, the upper portion being shaded with the colour of the tube, and the throat assuming a bluish tinge.

Gloxinia Speciosa, Var. Bicolor. *Lindley.*—This is a deep bluish purple variety, the throat of the flower being whitish, and the upper part of the limb edged with white.

Gloxinia Speciosa, Var. Cartoni. *Lindley.*—This is a finer variety than any of the preceding. It is a large full-formed flower, of good substance: the throat and the margin are both white, the rest of the flower being deep pink, increasing in its intensity near the mouth of the tube. It is a very fine variety.

Gloxinia Speciosa, Var. Rosea Alba, (of gardens.)—A hybrid obtained by Mr. Rendle of Plymouth, between G. Speciosa rubra, and G. Candida. It has handsome pale rosy flowers, with a white throat, and possesses a dwarf habit of growth.

Gomphrena Pulchella, *Martius.* (Pretty Globe-Amaranth.)—The appearance of this plant is something like the well-known Globe Everlasting, which has for years been cultivated in our hot-houses; the heads of flowers are larger, and the colour is paler, but of a brighter cast, and instead of owing its beauty, as that species does, to the coloured bracteas, the flowers of this kind are much longer than the bracteas, giving the plant a somewhat different character. It is apparently an annual, and has been introduced from Monte Video, by Messrs. Veitch, with whom it flowered in the month of July. The leaves are opposite, lance-shaped, and very acute, and the lively rose-coloured flowers are produced at the end of every branch. The habit of the entire plant is erect.

Habrothamnus Cyaneus, *Lindley.* (Blue Habrothamnus.)—A half-hardy sub-shrubby plant, growing from four to six feet high, and producing at the ends of its branches its numerous clusters of half-pendant, tubular violet-blue blossoms; the leaves are ovate-oblong and wavy, and covered with greyish down, which gives them an hoary appearance. It is a native of Yangana, near Loxa. Although probably not hardy enough to endure our winters unprotected, the colour of its blossoms renders it an acquisition, even though it required green-house treatment. It flowers in August and September. Probably it may be useful as an out-door plant in the summer months.

Habrothamnus Purpureus, *Lindley.* (Purple flowered Habrothamnus.)—This rather coarse-looking plant, seems to have been introduced from Mexico by some of the Belgian nurserymen. It is a soft-wooded, sub-shrubby plant, with rather large oval-pointed leaves, the midrib and veins of which are red; and the ends of the shoots are adorned by cymes (bunches) of reddish purple or carmine flowers, almost in shape resembling some of the swollen tube-flowered heaths. It should be grown in a green-house, where it attains about the size of a large Pelargonium: a close confined atmosphere, and an elevated temperature, induce a straggling habit in these plants, which is by no means agreeable; and the flowers always are of an inferior colour, under such circumstances. Less ornamental than H. Fasciculatus.

Hindsia Violacea, *Bentham.* (Porcelain blue Hindsia.)—A very useful plant, on account of its porcelain blue flowers. It will most probably be found to grow well in a warm green-house. It is a shrubby, scarcely-woody plant, with large oval leaves, on long stalks, and producing clusters of flowers at the ends of the branches: individually the flowers are composed of a long narrow tube, with the extremity much dilated, and divided into five spreading petals, forming a star-shaped blossom of a pretty violet blue colour. It was introduced from South Brazil, by Messrs. Veitch, of Exeter; and has been exhibited by them during this season. It will be a useful plant, on account of the colour of its flowers.

Ipomæa Crassipes, *Hooker.* (Thick flower-stalked Bindweed).—A slender climbing plant, clothed with soft short hairs; the leaves are lance-shaped, rather broad at the base, and are stalked; and from their axils the flowers are produced singly, seated on little stalks, with two opposite small leaves a little beneath the flower. The flowers are large, funnel-shaped, and of a rich purple colour. It inhabits the elevated country about Macalisberg, in Southern Africa, whence it was imported to the garden of the Earl of Derby, at Knowsley, and produced its flowers in August of last year.

Juanulloa Parasitica, *Ruiz* and *Pavon.* (Parasitical Juanulloa.)—This plant is in cultivation under the names of Brugmansia Parviflora, and B. Floribunda, but in reality does not belong to that genus, being the hitherto rare, and but little known, Juanulloa Parasitica of the authors of "Flora Peruviana." It is a small shrub, with alternate, rather large and succulent, obvate leaves, on short stalks, and clusters of flowers, produced terminally on short drooping branches. The outer covering of the flowers (calyx) is orange-coloured, and divided at the end into five segments, the flower (corolla) is tubular, projecting beyond this covering, and terminated by five blunt spreading teeth or segments, and of the same orange colour as the calyx. It is altogether a very desirable and showy plant. It is a native of woods in Peru, growing attached to the trunks of the trees, whence the name *parasitica.*

Loasa Lucida, *Florist's Journal.* (Shining-leaved Loasa.) A dwarf-growing trailing annual, with glossy, bright green, triangular, lobed leaves, and pretty flowers, consisting of white spreading petals, the centre being yellow, tinged with red, and the stems projecting and forming a point. It is scattered over with stinging hairs. Introduced from Coquimbo.

Lobelia Fulgens, Var. Multiflora, (of gardens.)—A variety raised by G. Symons, Esq., of Lyme Regis. It has downy leaves, and produces numerous spikes of bloom, from two to three feet high, with crimson flowers of very large size.

Lobelia Fulgens, Var. Pyramidalis, (of gardens.)—Also raised by Mr. Symons. It has bright glossy leaves, and rather smaller, though higher coloured flowers. The habit of the plant is robust, the flower stems rising about four feet in height. These two varieties are very attractive ones.

Lonicera Discolor, *Lindley.* (Stained flowered Fly Honeysuckle.)—A slender growing shrub, from the north of India. It has deep purple branches; smooth, oblong, stalked leaves; and very long, stalked, pale yellow flowers, stained with purple. It belongs to that section of the genus, whose distinctive mark consists in the complete adhesion of their twin seed vessels (ovaries), so that when ripe, all trace of their two-fold origin disappears. It flowers during the summer.

Lupinus Arvensis, *Bentham.* (Field Peruvian Lupine.)—This is a neat little half-hardy biennial, introduced from fields near Loxa, in Peru, by Mr. Hartweg, to the garden of the Horticultural Society. The flowers are of a bright lilac-colour, and pea shaped, with a white centre to the upper part of the flower, and within this a yellow spot. It grows about two feet high, and flowers during the greater part of the summer and autumn. Though strictly a biennial plant, (that is, of two years' duration) it succeeds best when treated as an annual.

Macleania Longiflora, *Lindley.* (Long-flowered Macleania.)—This is a neat, evergreen, green-house shrub, attaining in its native region about five feet in height. The leaves are of an oblong-oval figure, and the flowers are produced from the axils of the leaves, two or three together; they are scarlet, angularly tubular, more than an inch long, and divided at the point into five small pointed segments, expanding so as to form a little star. The plant has large fleshy roots. It is from the Peruvian Andes, near Loxa, where it was collected by Mr. Hartweg; and in cultivation requires the protection of a warm green-house.

Myosotis Azorica, *Watson.* (Azorean Mouse-ear, or Forget-me-not.)—A species common about waterfalls, streams, and wet rocks, in some of the westerly islands of the Azores. It resembles our native waterside species M. Palustris, but has larger flowers, of a deep indigo-blue colour, and is more prolific of bloom on the numerous lateral branches, which it puts forth. It is, also, otherwise botanically distinguished from all our native species. It is a herbaceous perennial, scarcely hardy, growing about two feet high: being naturally adapted to a very moist atmosphere, it may probably suffer from the drier climate of our gardens, unless moisture is maintained about by some transparent covering.

NEMATANTHUS CHLORONEMA, *Martius.* (Short flower-stalked Nematanthus.)—A soft-wooded sub-shrubby stove plant, with drooping, tubular, scarlet flowers, and large, fleshy, oval, pointed leaves. The differences between it and N. Longipes (also a handsome plant), consist chiefly of minor botanical characters. It is from the Organ Mountains of Brazil, and flowers during the latter part of the summer.

PENTAS CARNEA, *Bentham.* (Flesh-coloured Pentas.) — A soft-wooded, shrubby plant, which in a young state is exceedingly well-proportioned, but gets straggling as it becomes older. The leaves are large, oval, and hairy, on stalks of medium length; and the flowers are produced at the ends of the numerous branches in clusters of considerable size; they are of a delicate flesh colour, rather tinged with lilac, and are composed of a long narrow tube, and a star-shaped expanded portion, consisting of five segments. Its native country is not certainly known, but it is believed to be from Africa, within the tropics; and was introduced to this country from Belgium. It is exceedingly easy of cultivation, in an ordinary plant stove, or warm greenhouse in summer.

PHASEOLUS LOBATUS, *Hooker.* (Lobe-leaved Kidney-bean.)—This species has leaves divided into three deep lobes, resembling those of a Passion-flower. The yellow pea-shaped flowers are borne in few-flowered racemes from the axils of the leaves; they have little or no beauty, but the keel of the flower is spirally twisted, like the shell of a snail. It is a native of Buenos Ayres, and Rio Negro; and was raised in the Botanic Garden at Glasnevin, Dublin, where it flowered in September.

PHLOMIS CASHMERIANA, *Royle.* (Cashmere Phlomis.) — A hardy perennial plant with oval-lanceolate leaves, and a flower-stem bearing whorls of pale lilac, nettle-like flowers. It grows about two feet high, and flowers in July and August: as the name implies, it is a native of the valley of Cashmere.

PTERODISCUS SPECIOSUS, *Hooker.* (Showy Pterodiscus.)—A stove herbaceous plant, from Macalisberg, in the interior of Southern Africa; introduced to the garden of the Earl of Derby, at Knowsley, and flowered in May of the present year. It has a large, round, tuberous root, from which the stem arises, dividing itself into several erect, leafy, succulent branches, which attain from a foot to a foot and a half in height: the leaves are large, oblong, with toothed edges, situated opposite on the stem, on short footstalks; and from their axils the solitary flowers are produced: the flowers are funnel-shaped, nearly two inches long, with a spreading five-lobed mouth, and of a beautiful rosy purple colour. It is an exceedingly ornamental plant.

RHODODENDRON APRILIS, *Herbert.* (April-flowering Rhododendron.)—A handsome hybrid, raised by the Dean of Manchester, and named by him from its season of flowering. It appears to possess a neat habit, and bears large heads of flowers, whitish towards the centre, and bright pink towards the edges, the upper petal being spotted. It was originated between the Davurian and the common Pontic Rhododendrons, and proves quite hardy.

SALVIA PRUNELLIOIDES, *Humboldt.* (Prunella-like Sage.)—The chief merit of this plant consists in its being hardy, growing compact, and producing blue flowers. The leaves are ovate-oblong, with an obtuse point, and attenuated base; the flowers are bright-blue, produced on dwarf stems, in great profusion, and that medium degree of luxuriance, which constitutes compactness, without crowding or inconvenience. It has been found in various parts of South America and in Mexico. It is not strictly new.

SEDUM TELEPHIUM, Var Alpinum, *Maund.* (Alpine Orpine.)—A decumbent variety of the common Orpine, found by Mr. Cameron, on Titterstone Clee-hill, Shropshire, and cultivated by him in the Birmingham Botanic Garden. It is only distinguishable from S. Telephium in being earlier, and more slender and diffuse in its mode of growth.

SIPHOCAMPYLUS LANTANIFOLIUS, *De Candolle.* (Lantana-leaved Siphocampylus.)—An erect stove shrub, with rather large, oval, stalked, leaves, and terminal, many-flowered racemes of long, tube-shaped, deep crimson flowers, divided at the end into five narrow segments, which reflex, and show the inside of a pale-pink colour. It is of rather weak growth, but is altogether a good-looking plant, flowering in the spring. It is from Caraccas.

SPIRÆA REEVESIANA, *Lindley.* (Mr. Reeve's Spiræa.)—This plant was introduced from China, and is a handsome, hardy, sub-evergreen shrub, growing three or four feet in height. The leaves are lance-shaped, with a small projecting lobe on each side; the round flower heads are produced at the end of the shoots, and they consist of numerous small hawthorn-like blossoms. It flowers about the month of May.

STATICE PSEUDO-ARMERIA, *Murray.* (False Thrift.)—A half-hardy, herbaceous perennial, from the south of Europe, with tufted obovate leaves, and dense globular flower heads, on stems from a foot to eighteen inches high. The flowers are of a pretty pale rose colour, and altogether, though not new, it is a valuable addition to our autumn-flowering plants. It is called Armeria Latifolia, and A. Cephalotes.

Statice Macrophylla, *Sprengel.* (Broad-leaved Sea Lavender.)—This plant has been frequently exhibited during the past season. It is more ornamental than S. Arborea, being well furnished with large obtuse, spathulate leaves; the leaves are tapering at the base, and are seated closely around the erect shrubby stem, forming a dense tuft. From the top issues the flower-stem, forming a large branching panicle, two or three feet high, the branches and flower-stalks on which are flattened, and broadest upwards; the flowers are borne in an aggregated position, on the ulterior ramifications of the branches; the calyx is flat and spreading, of a rich purple-blue, and remains on the plant for months; from this issues five white, somewhat fugitive petals. It is a very desirable green-house plant from Madeira; but impatient of cold (even in a green-house), when forming its young leaves, late in the autumn.

Stenomesson Aurantiacum, *Herbert.* (Orange-flowered Stenomesson.)—A pretty little bulbous plant, with narrow, strap-shaped leaves, the edges of which are rolled back; and pretty, drooping, orange-coloured, tube-shaped flowers. It was found in Mexico, by Mr. Hartweg, at an elevation of 11,000 feet above the sea; and will probably be nearly hardy.

Stenomesson Hartwegii, *Lindley.* (Hartweg's Stenomesson.)—This is a small bulb, which produces its flowers two or three together, on the top of a stalk, less than a foot in height; they are drooping and tube-shaped, with the edge cut up into six divisions, but not folding back, or expanding: the colour is a gay orange, or pale flame tint. It was found by Mr. Hartweg, in the province of Quito, in Peru, at the height of 11,800 feet above the sea; and is deserving of a place among curious and interesting half-hardy plants, although, from its small size, it is not very showy.

Stigmaphyllon Jatrophæfolium, *Adrien de Jussieu.* (Jatropha-leaved Stigmaphyllon.)—This is a neat little climbing plant, adapted for growing in pots, and to be attached to light fancy trellises. Its leaves are palmate, that is, spreading out like an open hand, and are composed of from five to seven divisions, with a few scattered hairs along the edges; they are also of a fine light green. The flowers are in compact, round, clusters, on long stalks, produced in the axils between the leaves and the stem; they are individually of a clear orange yellow, and consist of five roundish-cupped petals, with fringed edges, which, when expanded, form a broad flat cup surrounding the stamens. It grows trailing on the ground, in rocky places, on the banks of the Uruguay; and succeeds in cultivation, when cultivated in a cool stove: probably it may be found to succeed in a green-house.

Thomasia Stipulacea, *Lindley.* (Large-stipuled Thomasia.)—A shrubby plant, with hairy, heart-shaped leaves, deeply notched around the margin, and situated on long stalks. The little racemose clusters of flowers are produced on the stem, opposite the leaves; the flowers are large, all leaning one way, and are of a pink colour, having a light purple shade suffused throughout them. It is a native of New Holland; and produces its blossoms freely towards the autumn.

Thunbergia Chrysops, *Hooker.* (Golden-eyed Thunbergia.)—A very handsome addition to this fine genus. It is a climbing plant, of an herbaceous or sub-shrubby character, and a neat habit; the leaves are opposite, somewhat heart-shaped, with small angular teeth on the margins, and an acute angular point; the numerous flowers are produced singly in the axils of the leaves; they are of the same form (funnel-shaped, with a spreading mouth) as the common species, but of a most beautiful combination of colour; the eye is golden, surrounded by a belt of light blue, whilst the outer portion, comprising the five broad segments into which the exterior edge is broken, is of a rich dark purple. It was introduced from Sierra Leone to Knowsley, the seat of the Earl of Derby, whence it has been distributed.

Tropæolum Lobbianum, *Veitch.* (Mr. Lobbs' Tropæolum.)—A new species from Colombia, discovered by Messrs. Veitch's collector. It has large, rounded, leaves, with long foot-stalks attached in the centre at the back; the stems, as well as the leaf and flower stalks, are pubescent (downy): the flowers are abundantly produced, large and handsome, of a bright flame colour, with fringed petals, and a long spur. It is a green-house herbaceous plant, of considerable beauty; and together with all the members of this family, there is no doubt it would succeed well out of doors, at least, during the summer.

HORTICULTURAL NOTES.

Florists' Flowers.—As a Tulip-grower, I hail with a lively satisfaction the manner in which you have made mention of that noble flower, and accept it as a guarantee that in your work those splendid flowers, which are generally known as "Florists' Flowers," and of which the tulip is the acknowledged head, will receive their due share of attention.

A new addition to the Orchidacea from Brazil, a new flowering shrub from Australia, or a new annual from California, no doubt demand and deserve a certain degree of attention; they are living witnesses of the taste and talent and enterprise of our countrymen, and although the first may be more grotesque than beautiful, the second a lively specimen of the "nevergreens," and the third inferior to nine-tenths of the ancient Britons that are mowed down every midsummer with the meadow hay; still human exertion and thought and care have been bestowed on them, and it would be ungracious to the adventurous explorers of distant regions to undervalue their discoveries, and we praise and admire, but ofttimes with a mental reservation. But in presence of a first-rate collection of show flowers, no matter whether tulips, carnations, ranunculuses, or auriculas, we feel no drawback on our perfect admiration; we worship the spirit of beauty there most fully made manifest: colour soft or brilliant, "by nature's sweet and cunning hand laid on," the most classic beauty of form, the delicate shades of difference; invisible, unintelligible to the uninitiated, but broad and distinct to the keen eye and cultivated taste of the amateur. No need of mental reservation here; we have nothing to excuse. It is true the collector can narrate no "moving accidents by flood and field" to excite your wonder and to give a factitious value to his productions; but there they are, as goodly a sight as can well be looked on, and so you must confess, unless the frosty breath of utilitarianism has blown upon you, and congealed your sympathies with the natural and the beautiful.

I am sure it will not be necessary to set forth at great length the many claims that Florists' Flowers have on the conductor of a work on Horticulture, to be published in London; the means and appliances for their growth are cheap and simple, and their culture offers a delightful recreation to the man of business in his suburban retreat; he is doubtless not insensible to the beauty of an "Oncidium," or a "Dendrobium," but a "house" is rather expensive, and the "patent conical boiler," with its pipes and appendages, involves an expense which would look quite awful as compared with the cost of the "two-light frame" in which he grows his two hundred pots of auriculas.

I may also venture to assert that the finest varieties of Florists' Flowers of all kinds are to be found in the vicinity of London. I am far from undervaluing the spirit of our provincial growers, but it is an undeniable fact that if anything good is produced in any part of the country, it is not long before it may be heard of in London.

Under all these circumstances, I can hardly be wrong, I think, in arguing that to a very great number of persons it would be most acceptable to see an occasional and rather frequent notice of Florists' Flowers.—C. C.

Planting Trees.—When trees or shrubs are being planted, their branches should always be pretty freely thinned, unless they be such as the fir tribe or rhododendrons. This gives the roots a better chance of stimulating the portion left into free growth. The leading shoots should, however, be left for shortening in the spring, just before the opening of the leaf; when the sap then becoming active, and each bud left being equally matured, will rapidly distribute its impulse over the whole. On the other hand, if shortened early in winter, the sap, whilst deficient of energy to produce any apparent effect, will gradually ascend to the ends of the branches, become deposited there, and in the spring, being roused into quick action, impel the terminating buds into rapid growth, which will rob all below them of that stimulating fluid of which they themselves have become the greedy consumers. —*Maund's Botanic Garden.*

Hardy Annuals.—It has often occurred to me, that in many instances a much better effect might be created and maintained, by a properly selected collection of annuals and spring bulbs, than could be by either a botanical, or indeed by a select collection of hardy herbaceous plants. In saying this, I must not be understood to slight such useful genus of herbaceous plants as Phloxes, Penstemons, Mimuluses, Antirrhinums, Primulas, &c. These are all beautiful and highly useful plants, but scarcely so well fitted for very poor, stony soils, as are the highly showy Chryseises, Nemophillas, Œnotheras, &c.; or so well for heavy soils, as are the Candytufts, Collinsias, Clarkias, &c., all hardy annuals.

Is the object to have masses of colours? the annuals are decidedly the most suitable for the purpose. Or is it wished to grow plants singly, and as individual specimens? then again annuals will be found well adapted for such purpose; from the neat, humble-spreading Nemophilla, scarcely three inches high, up to the showy conical Schizanthus, three feet high and nine feet in circumference; or the robust Lupinus Cruickshankii, five feet high. Or is scent and fragrance the object? the Mignonette and Alyssums in the sunshine, and Schizopetaton Walkerii and Limnanthus Douglassii in the shade, will give all that can be wished for that way. In short, if we want dwarf plants or tall, trailing plants or climbers, slender plants or stout, early flowering plants or late, the catalogue of annuals will give us what we wish for. It is true, blue colours and yellows are somewhat predominant, and scarlets and rose somewhat scarce, but not more so than is the case with hardy herbaceous plants perhaps. Then any common garden soil will suit for the growth of most annuals. It is true, Stocks, Asters, Marigolds, &c., like good rich soils; and Sphenogynes, Calendrinas, Misembryanthmums, &c., like sunny situations—and by making a sowing (of any or all the *hardy* annuals, including Stocks and Asters) in the open ground, from middle to end of September, as ground may be in fit condition; and a second from middle to end of March (Stocks, Asters, Marigolds, Clintonias, &c., will require to be sown in weak hotbeds this time), with a third sowing from beginning to middle of June, a brilliant bloom may, with the aid of spring bulbs, be maintained during nine months of the year, even if only the following sorts (heights and colours of which may be got in any catalogue —Carter's for instance) were used:—Alyssum, Asters, Bartonea Aurea, Brachycoma Iberidefolia, Candytufts, Chryseises, Clarkias, Clintonias, Collinsias, Convolvuluses, Coreopsises, Eutocas, Gilias, Larkspurs, Leptosephons, Limnemthas, Lobelias, Marigold (African, Cape, and French), Nemophillas, Œnotheras, Oxyneas, Papavas, Phlox Drummondii, Platystemons, Rhodanthes, Schizanthuses, Schizopetaton Walkerii, Sphenogynes, Stocks, Sweet Peas, &c.—JOHN McDONALD, C.M.C.H.S.

FUCHSIA FLORIBUNDA.—The following experiments have been tried at the Horticultural Gardens with this plant, to ascertain the effect of different manures. Eleven struck cuttings were potted at the same time in 32-sized pots—in compost of peat and loam in equal proportions. To No. 1, was added one teaspoonful of Harris's Liquid Manure, in half a pint of water—No. 2, half an ounce of Apatite, spread on the surface of the soil—No. 3, half an ounce of Apatite mixed in the soil—No. 4, one ounce of charcoal on the surface of the soil—No. 5, one ounce of charcoal mixed with the soil—No. 6, half an ounce of superphosphate of lime mixed in a pail of water—No. 7, one ounce of cow-dung mixed in the soil—No. 8, quarter of an ounce of phosphate of ammonia mixed in half a pint of water—No. 9, half an ounce of superphosphate of lime mixed with the soil—No. 10, one teaspoonful of Hallett's Concentrated Liquid Manure in half a pint of water —and No. 11, had nothing added to the soil. The substances were administered a second time, and the result was as follows:—

Nos. 1, 2, and 3, were the most luxuriant and nearly alike.—Nos. 4, 5, and 6, the next so.—Nos. 7, 8, and 9, the next.—No. 10, the next.—And No. 11, to which nothing was added, was the least luxuriant of the whole.

MEXICAN VEGETATION.—"They left the stream on the following morning, and striking northerly across the country, came upon a wide expanse of luxuriant plains and woodland, glowing in all the splendour of tropical vegetation. The branches of the stately trees were gaily festooned with clustering vines of the dark purple grape, variegated convolvule, and other flowering parasites of the most brilliant dyes. The undergrowth of prickly aloe, matted with wild rose and honeysuckle, made in many places an almost impervious thicket. Amid this wilderness of sweet-smelling buds and blossoms, fluttered numerous birds of the parrot tribe, and clouds of butterflies, whose gaudy colours, nowhere so gorgeous as in the *terra calcente*, rivalled those of the vegetable creation; while birds of exquisite song, the scarlet cardinal and the marvellous mocking-bird, that comprehends in his own notes the whole music of a forest, filled the air with delicious melody. The hearts of the stern conquerors were not very sensible to the beauties of nature, but the magical charms of the scenery drew forth unbounded expressions of delight; and as they wandered through this 'terrestrial paradise,' as they called it, they fondly compared it to the fairest regions of their own land. As they approached the Indian city, they saw abundant signs of cultivation, in the trim gardens and orchards that lined both sides of the road. They were now met by parties of either sex, who increased in numbers with every step of their progress. The women, as well as men, mingled fearlessly among the soldiers, bearing bunches and wreaths of flowers, with which they decorated the neck of the general's charger, and hung a chaplet of roses about his helmet. Flowers were the delight of this people. They bestowed much care in their cultivation, in which they were well seconded by a climate of alternate heat and moisture, stimulating the soil to the spontaneous production of every form of vegetable life."—*Prescott's Conquest of Mexico.*

POTATOES.—If some of our readers would plant a few potatoes in autumn, four inches deep and whole set, instead of cut ones, they would find a healthier and better crop; and unless it were one of those seasons in which frost is severe enough to penetrate the ground to something below that depth, which is not one season in twenty, and even then it might be kept out with any kind of litter, they will be somewhat earlier. If any potatoes have been left in the ground accidentally, and have been left undisturbed, the next season it must have been observed that the potatoes were numerous and fine, as compared with a potato of an ordinary crop. It has long been a subject of discussion, what caused decrease in the potato; but when, as is almost always the case, potatoes have been growing their very insides out, before they are even cut up for sets, it can hardly be expected that a healthy crop can be the result. Autumn planting prevents any loss of strength by this premature growing.

PRACTICAL GARDENING.

OPERATIONS FOR FEBRUARY.

FLOWER GARDEN.

Ranunculuses.—Those which have been planted in autumn must be covered with litter, that, in the case of a frost, they may be protected from the worst of it ; but no one plants valuable roots in autumn : they are generally the coarse kinds, or surplus stock, and planted for the sake of the flowers in the garden, not for exhibition, nor for best beds. The beds for the best collection are now empty, the soil being turned out on each side, where it ought to have been sweetening for some time, and been turned over several times ; the bed being emptied of its contents, may have two or three inches thickness of decayed cow-dung rotted into mould put at the bottom, and be filled up with the soil on the sides of the beds ; there it may be formed into a ridge along the bed, until about the 10th, when it may be levelled and drills drawn three inches deep, six inches apart, and the whole length of the bed. The arrangement of the varieties is purely a matter of taste ; some, when they are for exhibition, keep the sorts together, and let them grow in rows across the bed, and as far down the bed as they will go ; others contrive to grow a row of a sort, and the beds being for the most part four feet across, the rows are seven each to reach across, the outer rows being six inches from the sides. The mode of planting is to press the tubers down upon the bottom of the drill, so as to be solid underneath, and then to draw down the earth into the drills, (taking care to bruise the lumps,) and let it lay close about the tubers, covering them about two inches. Here they may remain without much care or attention until they begin to come up, but that will not be this month. If you have no bed made for Ranunculuses, and are to prepare one, have the mould taken out eighteen inches deep, and fill the bed with rich loam and cow-dung well mixed, and laid together for a year ; or, if you can get nothing else, fill up with the loam formed of rotted turfs from a pasture. If there have not been too much soil taken with the turfs, the vegetable mould from the decayed turfs may be equal to the first growth of the Ranunculus. However, if, when you have put in six inches of the eighteen, you can give a good two or three inches of decayed dung before you put on the other twelve, it will help a good deal. Ranunculuses should be grown in open situations, where, to shade them, you must use hoops and mats ; they require plenty of air and water, and from the time they begin to show colour they require shade, therefore have a care for these matters while fixing the place for your bed.

Tulips, now growing rapidly, must be kept from frost by some means, and by none so easily as a transparent cloth, which may be kept close down while a frost lasts, however long it may be. Frost will not kill, and in some people's eyes it does not even damage Tulips ; in ours, it is fatal to show flowers. We attribute every notch to frost, every split petal, every blight, and even the discolourations. We think it of the highest importance to keep off the frost, even if it draw up the flowers weakly ; and we believe the old-fashioned mode of supporting the Tulips on a bed by silk lines along the rows, arose out of the necessity which they considered existed to keep off the frost, at the cost even of the strength, which modern growers think it so essential to preserve. Many there are who care not for any weather, they allow their best Tulips to brave it all ; and frequently it has not appeared to ordinary observers to materially affect the bloom. It would, however, be difficult to find, in such a bed, many which had not some fatal blemish for a stand—some cracked, some notched, some blighted, some heavy in colour, not one of which blemishes has been attributed to the right cause ; and the most experienced fanciers and cultivators of the flower have wasted hours and days discussing the causes, which we (founding our notions on those in whose opinions we had the highest confidence) fancy we trace to a single attack of frost on the bloom in an incipient state ; therefore we say, at all cost, keep off the frost ; stir up the earth between the bulbs as soon as they are all up, to give air to the roots.

Auriculas require top dressing and setting to grow this month. Obtain rich loam and leaf-mould and decomposed cow-dung, that has lain together, and been well mixed: this is rich and harmless. Now, with a piece of wood, cut into the form of the blade of a knife, but not sharp anywhere, prepare to remove the upper crust of the soil in the pot, until you come to the fibres, which must not be disturbed nor bruised. Throwing off this loose stuff, fill up with the rich soil or compost already mentioned, first removing the decayed and half-decayed leaves from the plant ; you fill the pot nearly full, for the water will settle it down a little after all, if it be quite filled. This top dressing being applied to all, they may be watered with a fine rose, and shut down close in their frames, well matted, for the next twenty-four hours, after which they may have air in mild weather, but be kept close in hard frosty or cold windy weather: from this time forward they must have no check. It is impossible to check a florist's flower from the time it begins to grow for blooming, without actually spoiling the form. If all your plants appear too forward for the day of show, it is better to let them take their chance than to throw them back by any check, for they rarely, if ever, bloom flat, or large, or finely, after anything like a decided check.

Pansies, in beds, should have litter over them to protect them against hard weather; and when the ground is rotten with frost, or full of worm casts, or when the frost has disturbed the roots, the plants should be pressed into their places, and a top-dressing of decayed cow-dung, or leaf-mould, may be given to them, at least some of it laid round each plant, if not all over the bed. A sharp examination for slugs is desirable; one of these destructive vermin could spoil many choice plants in a short time. Pansies in pots, under glass, should be shifted into larger sizes, or planted out in beds; for as this is the period for them to begin growing, they will weaken themselves if confined in small pots, and bloom out of character. In forming beds, the plants should be put out six inches apart, in rich mould, where they would have all the benefit of sun and air. After they are planted out, some rough litter should be spread over them the first few days, as well to protect them from sun and wind, as from frost also.

Pink beds may still be made, though autumn is far the best time. The compost can hardly be too rich for them. They ought to be six inches apart. Beds already made may be top-dressed with cow-dung in a decayed state, or for want of that, the mould formed of rotted dung from a melon bed or cucumber frame. They should be pressed into their places if disturbed by frost; and like all other small plants, whether hardy or not, they are the better for litter of some kind. It does not take away the light altogether nor the air, yet it breaks off stormy winds (which often snap these things and Pansies off quite short), and also prevents the violence of heavy rains from disturbing the plants.

Carnations and Piccotees require nothing more at present than being kept clean, dry, and cool; but it is time to prepare the compost for potting them, and procure the pots, which should be size sixteen, or size twelve. We prefer size twelve, although they cost a trifle more, and take more room. The compost must be clean, strong, rich, and light. For this, take clean hazel loam—the rotted turfs from a pasture is the very best stuff—say a barrowful of this, half a barrowful of cow-dung, and half of road-sand, where the road is gravel. Or if you have clean loam not so rich, with the turfs, take a barrowful of loam, a barrowful of leaf-mould, a barrowful of cow-dung rotted, and a barrowful of road sand; let these all lie together and be chopped about pretty often between this and potting-time. As to the pots, see that they are clean, and freed from snails and other visitors which often take up their winter quarters in garden pots.

Polyanthuses and Primroses. — Many grow these in pots. It is not a good plan; grow them in a well-drained border of strong rich loam and dung, where slugs are well kept under by lime boundaries, and constant watching; for where these things are allowed to exist at all, there is no hope of either Primrose or Polyanthus; for they seem actually to poison what they cannot destroy. However, there may be a further cause for this. The want of drainage causes damp and disease; it also causes a vast increase of slugs; it may be that the damp both encouraged the vermin and poisoned the plants, where we have seen them so bad. This month they may be cleared of dead leaves and top-dressed, the surface being stirred a little, so that the dressing may be washed down easier with the rains. If any have been kept in pots, they should be top-dressed, like Auriculas, and set growing.

Tender Annuals may be sown in a hot-bed for cultivation in pots until they are turned out in the borders; and hardy annuals may be sown towards the end of the month in places where they are to bloom. Those who wish to shine in early Balsams, Cockscombs, and other subjects bloomed singly in pots, begin this month, though they have later sowings. These subjects are sown in pots in the hot-bed, and as soon as they are up are pricked out singly into sixty sized pots, and shifted from time to time into larger sizes as they fill the smaller ones with roots. Mignionette, ten-week Stocks, and Asters, may be sown among other things, to forward them for the borders and beds.

Anemones are planted at the same time and in the same way as Ranunculuses; single ones are, however, planted like common Ranunculuses in the autumn, and are nearly all the winter blooming, rarely protected by anything but leaves of trees or light litter. These are seldom disturbed more than once in three years. The double choice ones, however, should be treated in every way like the best Ranunculuses.

Sweet Williams, Wallflowers, Rockets, Canterbury Bells, and very hardy herbaceous plants, may be removed into the places they are to bloom in. Borders in which bulbs are growing must not be disturbed, as there would be every danger of cutting or bruising those which do not show above ground.

Hyacinth Beds.—Stir the earth between these plants as soon as they are up, to give air to the. roots and refresh them. Cover with long litter, in preference to a mat or cloth, such as peas haulm, or rough broken straw ; the straw from the truss, unless broken up, lies too close a good deal.

Cuttings and Small Plants in store pots and pans, must be kept in their several pits or frames, or other place of protection, without much water; merely keep them free from dead leaves, and dead plants, if any happen to have gone off.

Generally speaking, the ground is too wet to enable us to work much in the open air this month ; but, if it be open dry weather, alterations and improvements may go on ; box-edging may be repaired or made, clumps may be formed, and all kind of work that would be better done in the autumn may be done nevertheless ; but all this should be done in the autumnal months.

THE GREEN-HOUSE.

The most essential thing to guard against just now is damp, and it will be necessary to light a fire occasionally and give air at the top of the house at the same time; this draws the damp out, and it escapes. This should be done in the middle of the day. The pots should be all examined to see that the drainage is free. If any of the soil looks black and wet, and the pot feels heavy, there is something wrong. If any of the pots are too full of root, the plants should be removed into pots a size larger; and the soil should be rich, light, and moderately porous. There is a soil which is good for almost every kind of green-house plant—loam with the turf rotted in it, decayed cowdung, leaf-mould, peat-earth chopped small, or rubbed through a very coarse sieve, and road sand, equal quantities of each ; it will do for everything; but if we had heaths to grow, we should treble the quantity of peat-earth, and not alter the others, so that it would be one of each of the others and three of peat-earth, instead of one all round. In moving a plant from one pot to another, take care that the plant be not sunk in the least more in the new pot than it was in the old one, and see that the compost, well mixed up, is made to go down very nicely all round the old ball of earth. Plants shifted in this way should have a little water to settle the earth to the roots. All the shelves of the green-house, and all the plants, should be cleared of dead leaves, and the places kept very clean.

THE FORCING HOUSE OR STOVE.

Flowers and plants are easily bloomed earlier than their usual season, by placing them in a stove, or a warmed green-house, or a common hot-bed, and in most establishments, even small ones, there is something to be done in this way. If you have already been forwarding any flowers, or flowering plants, which are now upon the eve of blooming, they may be removed to the warm sitting-rooms, where their flowers are to be enjoyed, and others may be put in to get forward. All things for forcing should be prepared by lower heat first, and then have it increased. Hyacinths, and most flowering bulbs, would bear placing in heat at once, if kept well moistened. Roses, Rhododendrons, Azaleas, and most flowering shrubs, require to be gradually introduced to heat, beginning a while at 40, and increasing to 45, 50, 55, and even 60; but if you are not in a hurry for flowers, the less the heat at which they are produced the better they will bear removal, and the longer they will last after removal. Hyacinths, bloomed at the temperature of a common sitting-room, will be in flower for weeks; while those flowered in a hot-bed of 60, or 65, or 70, will soon lose their beauty. The great point to attend to is, to begin in time, and not use too high a temperature. Stove plants are for the most part resting, and must not be watered too much. The end of this month, or the beginning of next, many will begin to grow, when they must be encouraged; if necessary, shifted into larger pots; and this will set them off. Gesneras, Gloxinias, Achimenes, and many tuberous and bulbous-rooted subjects, require immediate attention; they should be potted in good compost, like that recommended for the green-house plants. The house must be thoroughly cleaned, the dead leaves and dirt all removed. All specimen plants, which make growth and bloom on the new wood, must be examined and washed, or syringed, to free them from any kind of vermin: they must also be shifted if required, especially the beautiful Ixoras, Euphorbia Jaquiniflora, Gardenias, Brugmansias, &c. Seeds of all kinds, both of green-house and stove plants, may be sown in pans, pots, or boxes, and placed in a cool part of the stove, and preparation may be made to receive Dahlias to propagate; for it is much easier than a hot-bed to break them and take off the cuttings. Many other subjects that require heat for propagation may be set to work in the stove. Climbing plants on trellises beginning to grow fast, must be fastened as they advance, and not be allowed to hang about, or grow on the wrong places, as their leaves will never show their proper faces so well after being set, as it were, by their straggling growth; for when the branches are trained, after being neglected, half the leaves are with the backs to the spectators, and often cannot recover themselves. The heat should be about 60 by day, and 55 by night. It is desirable always to have it cooler by night; for which purpose the fire should be always alike in still weather, and the difference of temperature between night and day will occur without any pains-taking to make it so; but it will be found in windy weather that the fire must be increased to keep up the ordinary temperature. Wind cools a house more than frost, though it is not generally noticed, perhaps.

KITCHEN GARDEN.

Peas, one of the most important of the kitchen-garden crops, should be sown as often as once in three weeks, and in such quantities as will supply the demand. Many prefer two or three sowings, and there is an end of them. We consider that frequent sowings in smaller quantities diversify the produce of the garden, and keep a better succession. The first sowing, therefore, this month, should be three weeks from the last sowing in January; and so continue three weeks apart, and in such quantities as you anticipate will meet the demand. It is a bad plan to have large crops coming in upon you at particular periods, which is generally the case, when, with subjects that do not keep, you provide what is called main crops.

Spinach.—Sow in open weather some round-leaf spinach. This is a crop which is in demand when it first comes in, and a succession is best kept up by sowing a little every three weeks. If the weather be mild, it will come up and grow rapidly, and should be thinned out where it is very thick, but not too much, because when it has four good rough leaves it may be drawn for use to thin the rest, which may grow larger. Winter spinach, now in use, should have only the larger leaves picked, and the centres grow out, to keep a supply.

Asparagus and Sea-Kale may be forced still by the ordinary means. The former in a hot-bed, the latter by covering up somehow with boxes or pots, and surrounding them with hot stable dung, or fermenting leaves. Rhubarb may also be forced by the means of boxes or pots on purpose, and stable dung or leaves. Old hot-beds in which asparagus has been forced and done with, will be in excellent order for other things, first clearing out the asparagus roots, and levelling the stuff.

Potatoes.—A few ash-leaf kidneys may be planted on the old asparagus beds, and a row under a south wall. Use whole sets, dig the space all along, and well bruise the earth; lay the sets on the top, a foot apart, all the way along; then dig a spit well in front of them, and throw it on the sets. This will form a complete dry bank, which may be sloped a little, but the sets will be covered a good four inches all along the row. These potatoes will only occupy about eighteen inches of width all along the wall or hedge, as the case may be, therefore will not interfere with other crops materially. As these come up, they will have very little water, and you must see they are not absolutely starved; they must have a little given; and as soon as they are through the ground, litter of some kind must be laid along them. Potatoes, some of the early kinds, may be planted in any sheltered warm place, if early crops are an object. Those in frames should be six inches apart in the row, and the rows nine inches distance from each other. They should be at least three inches deep in the soil.

Cabbages.—In open weather, with the ground in pretty good order, sow some cabbage and savoy seed; and if you have any kind of cabbage, or savoy, or broccoli, or cauliflower, you intend to save seed from, remember you must not attempt to save two sorts of any of these, as it is impossible to save any of the cabbage tribe true, if any other is within sight; almost, indeed, there ought not to be any within a mile. Draw out many of the cabbage plants that are growing thick to use as coleworts, as by taking out two plants, to bunch up or use at once, and leaving the third, those which are left will have good room to cabbage well.

Cauliflowers under hand-glasses must have air in mild weather, by either tilting the glasses or taking them off altogether; and towards the end of the month, the three, four, or five under each glass may be reduced to two, and the others planted out to increase the hand-glass culture, two under each glass, or in some sheltered situation where they may take their chance. Plants under protection must be cleared of dead leaves, and sickly plants must be thrown away. See that they do not flag for want of water; but keep them as dry as possible short of that. If the weather be very hard this month, the removal of any from under hand-glasses may be deferred. Sow cauliflower seed, if you can do it, in a frame, if not, find a sheltered place, and sow it under hand-glasses.

Celery, so long as it is in the ground and growing, must be earthed up on dry days; sow a little seed in a frame if you can.

Salad, of all kinds, should be sown in frames, and on the open warm border. Cover salad, lettuces of all sorts, small salad, &c. Lettuces that have stood the winter may be planted out in warm quarters. Where you are sowing on the open borders litter must be provided to cover of nights, or let your sowings be where you can easily cover with hand-glasses, mats, &c.

Kidney Beans.—Any of the hardy early sorts may be planted three in a pot, to be taken into the green-house, or into a common hot-bed to force. In green-houses they should occupy high shelves; in hot-houses they should be near the front glass. In all cases of forcing, the house, or pit, or frame, should be cooler in the night than by the day, though it is too often a common error to light fires in the evening and raise the temperature when it is dark and not desirable for things to grow. In houses adapted for the forcing of anything, the fire should be taken care of all day, and allowed to go down a little at night.

Mushroom beds require to be kept warm and not too dry; if they are in the open air, and the covering is wet, let the wet be changed for dry straw. If you have not made your mushroom beds, nor made any provision for them, make the best use of the time now left, and attend to the directions given last month.

Turnips.—If the weather be favourable, sow a few early Dutch, or some of the new ones, said to beat them; a few sown at the end of the month may come in well.

Carrots.—A few, sown at a favourable period, will be found very useful, if they hit, and if not, the object of the seed is trifling.

Onions.—The same may be said of this useful vegetable. Sow a few twice this month, if the weather allow of it; just a few in drills, to draw young for salading.

Leeks, Beet, and Parsnips.—A little of each may be sown often with great advantage.

Beans.—Get in a row or two of Marshall's early prolific, or some other of the present favourites. The Windsor or other large kinds will do, but beans have greatly improved, and the best take no more room than the common. The end of this month, or the beginning of next, is the season for the main crop; but the consumption is never very great in private families where there is a good garden establishment and better things.

Horse Radish.—If you made no provision in autumn for this useful root, form a proper bed, provide yourself with some good rotten dung, trench your ground eighteen inches deep, throw into the bottom of the trench a little of the rotten dung, and some of the soil, to occupy about three inches of the eighteen. Then cut up waste roots of the horse-radish into pieces an inch long, and lay a row at the bottom, about six or eight inches apart, along the trench; then begin your next trench, and throw in the soil, well bruised and broken, to prevent any lumps spoiling the growth of the sticks; and when the new trench is made, the old one will have been filled up, so that you may put in the dung and a little mould again. Place a second row of horse-radish pieces on it, and form a third trench by throwing the stuff you take out into the second trench. The third being dug as deep as the others, and the second filled up by the process of digging it, you proceed to dung and plant the pieces as before, and so continue till the bed is completed, when you finish the last empty trench by filling it up with the stuff you took out of the first. This bed will grow into very excellent stuff, the sticks will come up straight, and grow handsome in two seasons. Next season you should do one to come in when the other is off, and so a succession should be kept up; and when used the bed should be trenched and cleared of it as completely as you would clear a bed of potatoes. Autumn is, however, decidedly the best time for forming these beds, though they will do now, if they do not come up quite so strong.

Herbs.—Sow all that are raised from seed, especially sow Parsley in any spare places you have, for it is a most useful and ornamental herb. It is a good plan to sow a whole quarter in drills, that you may afterwards draw out any that may appear secondary in quality; the most curled leaf being the most esteemed. There is a kind of Parsley cultivated for the root, but except where the flavour is required very strong, it is not used.

Cucumber Beds.—Line them where the heat is declining. Give air, and regulate the shoots to cover the space without crowding or crossing one another. If any of the branches are not indicating fruit, pinch them back to two or three eyes, that they may produce lateral branches more prolific; stop the ends of the principal shoots where they have grown a fair length; give air by tilting the glass behind, and supply water occasionally; pluck off any discoloured leaf, and where the leaves are too thick, and cover one another, remove the worst.

Dig up any quarters that may be done with, that is, that the crops are off. If cabbage stumps occupy a large portion, which is often the case, and are used for sprouts, it is not well to destroy them, but they can be removed and planted in close rows in some place of less consequence, and where they will not occupy a tenth part of the room; they will produce the sprouts just as well. The space they occupied can therefore be dug or trenched, as the case may be, being first dressed with dung, or leaves, or decaying vegetables, or whatever else is intended for a dressing. The surface may be left in ridges or rough dug, that the frost, if there should be any, may improve it. The clearing of paths, trimming of hedges, the clearing away of spent crops, wheeling dung or dressing into vacant spaces, where it is intended to be used, are all mere routine business, which speaks for itself.

THE FRUIT GARDEN AND ORCHARD.

Strawberry Beds may be made, if they have not been made at the proper time.

Choose an open situation; plant, if the ground be good, eighteen inches apart in the rows, and the rows eighteen inches from each other. If the ground be not very strong and good, eighteen inches from row to row, and twelve inches in the row, will be room enough. Myatt's British Queen requires all the room we have mentioned. Keen's Seedling is the most useful, perhaps, of all Strawberries, for forcing or growing in the open ground. Elton is a fine berry, and of good flesh and flavour; and Fisher's Princess Alice Maude is, like the Swainstone Seedling, good for early work. Strawberries succeed best in strong rich loam, but do not require dung in half the quantity that people imagine. Vegetable mould is acceptable to them, and a fresh turned-up pasture will beat almost anything for bringing a good crop.

Pruning is one of those essential operations that should have never gone over to this time; but if it have been neglected up to this, not an hour must be lost. Gooseberries and Currants should be gone over carefully, and all the little weakly wood be cut out; leave about three shoots on a main branch of Currant, and the end shoot leave on also; but cut out old branches where they are too thick, and cross each other. Cut in Gooseberries pretty sharp, and thin out the wood, to give air and sun. Vines, Wall-fruit trees, Pears, Apples, Plums, &c., both standard and dwarf, ought to have been completed long ere this.

Grafting.—Prepare for grafting by getting shoots or cuttings of whatever new or good things you require; and when you have got them, bury them nearly in the ground, the larger end downwards. It will keep them until they are wanted, in very good order. It is worth looking round your trees, to see whether there are any you would like to change the fruit of by means of grafting.

Planting, like pruning, should have been done long since; but if there be any sorts of Apple, Pear, Plum, Peach, Nectarine, Cherry, or other deciduous tree, that you require to add to your collection, lose not a day in procuring it. See to the taking of it up yourself; better pay an extra sum to get all the root removed unbroken, than to have it damaged. Have your holes ready made for the reception of your trees, and by care and attention you may save even the bearing, if there be any bearing buds. All you need do is to cut away any really useless branches, and shorten any straggling ones; because, by losing a little of the head, you may prevent the tree suffering at all from its moving, although this month is later than we should move them from choice. At the same time, being desirous of adding to one's collection of fruit, we should not hesitate to procure all we wanted, and do the best we could with them all; taking especial care to reduce the heads, if the roots get damaged.

FLORAL AND HORTICULTURAL SOCIETIES.

THEIR CONSTITUTION.

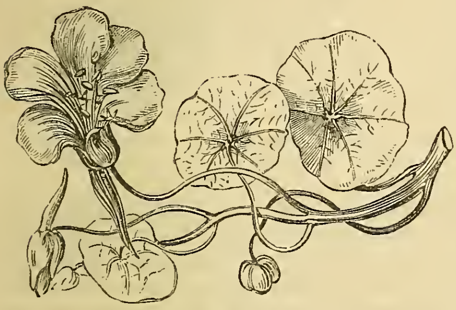
A new form of society has been of late proposed and discussed among limited circles, and the singularity of its constitution gives rise to various speculations. It is founded on a notion not bad in itself, provided time and space could be got rid of; but, as we think, singularly contrasted with all the ordinary rules for the government of such institutions. Before we object to any of the points, or suggest alterations, we must give an outline of the plan, as it has been promulgated. It has been suggested that a central society shall be established in London, for the purpose of holding a series of exhibitions upon a grand and effective scale; that all the members to this society shall contribute one shilling per month, or twelve shillings per annum; that seven shillings and sixpence of this shall go towards prizes, and four shillings and sixpence towards the expense of printing and an annual dinner. These contributions, aided by the trade, would, it is presumed, provide prizes upon such a scale as would encourage amateurs to exhibit in large numbers, instead of (as now in most cases) merely as many as can have prizes. It is proposed, however, that the members of this society shall be classed in circles; that is, all within a five-mile circle should form the home class, while all beyond that should form another, or outer class. The object of this is explained to be, that of making all those who grow within the smoke of London show together, and not among those who have fine pure air, and plenty of it, which is rational enough. But this central society was proposed to receive into a sort of union, local societies formed on the same principles, and the members of which may hold their meetings at home, as it were, and have their annual dinner at home, if they please, but, for the sake of the strength which centralization gives in the award of prizes, they should show with the central society; of which, in fact, they would become members. For this purpose the secretaries would enter the names of the members of branch or local societies at the central society; and pay the seven shillings and sixpence as the share of each member towards the fund for prizes, entitling them to exhibit at the grand annual show. Connected, however, with this object, it was proposed that local pink societies, ranunculus societies, and piccotee and carnation societies, should be placed in the same position, and shows be held for every flower; so that there might, according to the original plan, be twenty societies, comprising a couple of hundred members, paying into the main or central society; and thus securing the right to show for seven shillings and sixpence, where the prizes are very much larger and more numerous than they could possibly be if confined to the local societies themselves. It was, however, wisely provided that the central society should elect one out of every twenty as a committee; and that all local societies should send a member for every twenty to represent them in the central committee of management. Other details, which do not affect the general question, were mentioned; but we may leave them while we deal with the society upon its principal features only. We set out, then, with one of those sweeping matters of fact which nobody will or can dispute—"It is impossible to have the rules of a society too simple." It is impossible to compensate for the evils of complication by any advantage to be derived. We see not the least advantage in the admission of local societies, while the cross machinery, as it were, which it seems to demand or to cause in the management, is highly objectionable. For instance, what object is gained by the establishment of local societies, the members of which are to show at the central society? what single point is gained by it? It is said that this is to enable the members to associate at a house in their locality, to talk of flowers and shows, and to show specimens if they like, which they cannot do at the central society, on account of the distance; and it is further said, that the members of any local society can dine at their own place once a year; all of which, if the landlord of a public-house at which a society was to be formed were the only person to consult, would be highly desirable; but while we would, above all things, promote the periodical meetings of gardeners, as the very best means of improving one another, we should object to the notion of a man belonging to a society at his own home, for the purpose of showing flowers at a society afar off. The attention is necessarily divided. If the members desire to show at the central society, why not become at once members of the central society? because where a man shows he will want to dine, and if his dinner money has to be spent in his locality, he is taxed with a double expense. We object, however, to these local excrescences on another ground: where people meet and dine, they will want to show; and when they felt themselves strong enough, show they would, at home; therefore the central society would be nursing the branches only till they were strong enough; and would, after a certain time, always be losing some branch or other, so that there would be great fluctuations in the income. Then, again, the committee of the central society is to be formed by delegates from the branches, as well as persons elected from among the central members; by which a pretty good share of inconvenience must be suffered by the district branches, or the delegates attached to them, or they must go unrepresented at the board. We see, in fact, many evils arising out of so complicated a thing, and very little, indeed we confess we see no good. We see no point gained, no evil got rid of; because, if the members were entered direct as members of the society, they enjoy all the advantages which the principal or central board holds out; and whether they meet their brother gardeners at home or not, is a matter fully as open to them as if they were members of a local branch, and their money were paid at a meeting on the spot. The advantage would be in their subscription going where it would be the most use, and providing prizes and a dinner where the dinner was most likely to be wanted—that is, at the great London show. We opine, therefore, that so far as the local branches are concerned, the proposal is altogether bad; but that a central society, upon sound principles, adopting uniform judgment, awarding long series of prizes, and governed by unexceptionable persons, chosen by the general body from among themselves, would be of vast importance to horticulture. Now, it appears to us that it would be wiser to entertain the notion of holding shows in different localities, than it would be to drag all the local societies to London. We do not mean that it should be one year at Oxford, another at Liverpool, a third at Southampton, and so forth; but that one year it might be ten or twenty miles one side of London, and another year the same or less distance on the other side. Yet even this, while it gave particular localities the advantage of an influx of visitors, would greatly inconvenience those who came two hundred miles into London, and found they had to get other conveyances for themselves and flowers to get twenty miles further. Upon the whole, therefore, while we condemn so much of the proposed society as relates to the local bodies or branches, we approve of the simple plan which characterises the management of the central board, and which we think should be the only one. We think it quite desirable, for instance, that a society should be formed in London, to hold shows there, or thereabout, upon an effective scale; to which, however, all the horticultural world should be invited to become members. That the subscriptions direct to the funds should be twelve shillings per annum; that seven shillings and sixpence should go towards a fund for prizes, and four shillings and sixpence towards an annual dinner. This subscription should entitle a member to show any flower he pleased to mention; but if he showed any other flower, he should be subject to pay the entrance for such other flower, according to the rule laid down for such purpose. There should be no restriction as to the distance at which such members should reside; nor should there be any distinction between amateurs and gentlemen's gardeners. We approve of the circle round the smoke of London being made to separate those who grow under a disadvantage from those who do not. It is a rational distinction, and enables many to compete who could not otherwise attempt. As a whole, perhaps the best society that ever was established, and the society which has done the most real service to floriculture, was the Metropolitan Society of Florists and Amateurs. And we say this, not from any knowledge of the management (being very distant from the scene of its operations during the few years it was prominent), but from reading the reports of its proceedings, and from the perusal of its rules. Indeed, from opinions expressed by persons in and out of the trade, it was the single society that appeared to be looked up to as an authority by all others, and particularly by those in the neighbourhood of Sheffield, where committees, members, and exhibitions seemed all ready to appeal to its authority in matters of difficulty or dispute. Why or wherefore that society was withdrawn some of the country people are ignorant; but many societies profited by the leading rules, and we doubt if there could be any better adapted to keep a society together, with one exception, and that probably was relied on for a contrary effect. It was enacted that the society should be always controlled by the elder fifty members; a plan which in theory was good, because it was to be presumed that the elder fifty members would feel most interested in its well-being; and due provision being made that the non-payment of subscription should lose a man his place in rotation, and give it to those who paid before him, it was thought that it would be an inducement to pay up subscriptions regularly. Besides this, it was supposed that the plan was a security against the evil of too much change in the committee, from year to year, which would be guarded against. None of these things appear to have been carried out: the elder fifty members rapidly changed, and those beyond the fifty, who found themselves shut out of all power, were dissatisfied; wrangles and hot debates were heard of, and still the society went on, until some of the trade (for that is all we heard of it our way) established another, and the Metropolitan was, so far as we could learn in the country, withdrawn from public notice, and heard no more of. But it is impossible to deny that, seated as it was in the metropolis, supported as it was by the principal florists, and conducted as it was in the executive part of its affairs with great liberality, it gave a kind of spur to floriculture, which nothing else did or could, and was of great service to horticultural science. That there should be a grand central society in the metropolis cannot be denied; that this should be conducted on the most open and liberal principles is unquestionable; that it ought to extend its benefits as widely as possible, and be supported liberally by the trade, there can be no doubt, no difference of opinion; but there must be no packing, no mystery—there should be a plain, simple, well understood obligation to pay a subscription, and an equally well understood privilege enjoyed by the members who pay. The members should all be eligible to serve on the committee, and every annual meeting should be held for the purpose of electing them. As to the plan of balloting for members, or using any sort of reserve in the admission of members, it is a rock which many societies that have tried it have split upon; for it curtails the subscriptions; hundreds of good men refuse to submit to a ballot, and therefore will not be proposed as members.

In a public society, intended to be conducted fairly, there is no occasion to keep out any who are disposed to support it. The open meetings disarm even enemies; and when all things are fair and above board, there is no room for the exercise of ill-nature, nor any occasion to weigh the merits of every man who proposes to subscribe. Therefore do we say that it is injudicious to have any restriction upon the entry of members. Let any come in that will pay, and then every member is at liberty to look among his friends for others; adopt a ballot, and every member's exertions to increase the society are neutralized. The most important of all the steps a society has to take, is the appointment of judges; and this is, perhaps, the only thing that the members should do in secret; that is to say, appoint officers. This should be done by ballot; one day should be fixed for the nomination of persons to fill offices, and another to elect them. Every one that was eligible in other respects, should only be required to be nominated and seconded. The lists of all these nominated persons should be printed and forwarded to the members, who should deliver them with the proper number marked for election, and every member (first paying his subscription) should deliver in the printed list so marked. The number of the votes would determine on whom the election had fallen, and the election should include the vacant seats in the committee, the auditors, and the judges, upon whose qualifications for the task everything depends. Let us see a metropolitan society established on such a plan, and success, such as has not attended any previously, will be certain. Men are wearied of abuses in horticultural societies all over the kingdom. They want an example. Let that be set in the metropolis. Let it be done upon that open, free, and liberal principle which will engage all classes in its promotion, and interest all persons in its welfare. Let it be upon such an extensive scale, that the presence of men opposed to each other in some matters, may nevertheless, from the great number engaged, be individually as nothing. Look out for practical men for the officers; confine its shows to the metropolis, but let its members be of all the world. Moreover, let every show be open to anybody as well as members, only make them pay for choosing their time of entry. This is the time for carrying out such a society; and if either of those which have been talked of and proposed should be forward enough to take a promising shape, let those who wish well to it promote as nearly as possible the assimilation of its plan to the foregoing. Let us not hear of local societies meeting and dining in one place, and showing in another. We do not approve of the proposed central society with branches; we would rather see the Metropolitan Society revived with all its faults, than see carried out a plan full of defects, and containing in itself the seeds of dissolution. There must be some leading points in any that is to succeed. First, the subscription of acting members must be not too high, and must secure them certain privileges. Secondly, there must be honorary members, who will subscribe what they please, but be independent of all responsibility. Thirdly, there must be no ballot or other restriction to the entrance of members. Fourthly, the shows must be central, open to all the country, and all classes, upon the payment of a proper sum as entrance. Fifthly, the prizes must be worth winning, and plenty of them. Sixthly, they must be awarded according to some standard well ununderstood by both judges and exhibitors. Seventhly, the offices must be open to all members, to be chosen by the members. Eighthly, to render the income equal to the proposed expenditure, the trade must be applied to, and all other ordinary means for procuring the assistance of the nobility must be resorted to. Ninthly, the prizes must be paid on the show days. Tenthly, those prizes should not vary from each other more than ten per cent., or two shillings in the pound on the head prize, and ought to be ten in a class at the least, as practised at a recent exhibition in London. These are some of the points not to be lost sight of in a good metropolitan society, or society for the metropolis. We may proceed, hereafter, to offer a few hints as to the requisites for conducting a show, for it seems to be little understood; and yet very simple alterations would be of great advantage.

ROSES.

NOTES ON THEIR CULTIVATION AND REMOVAL.

Few people in this country are aware of the injustice sometimes done to Roses, which are condemned as worthless, when the culture alone is the cause of their misbehaviour. The Rose is a fidgety customer. The French people are famous for raising new varieties, and describing them as very superb; the English nurserymen buy them as soon as they can be obtained, and describe them to their English customers as something *recherché;* they are purchased by amateur cultivators upon the strength of such characters, grown for a year, and too often thrown away as worthless. Once for all, let us inform our readers, that no Rose can be depended on for growing to its character under the third season. The effect of poor culture is to make a double Rose semi-double and single; and that which would be rich culture to anything else, may be poor to the Rose, because if it be not suitable, it may as well be poor. There are many things which affect the Rose, but the principal one is tantamount to saying, that it does not feel itself at home. Nurserymen propagate Roses rather too mechanically; the greater part of them are like the countryman's razors, "made to sell." So long as the stock will keep the bud alive, and let it grow, that is all the nurseryman asks or wishes. As we once heard a plantsman say in a dispute, "If there be a fibre and a leaf, it is a fair plant." Now, it is quite certain that a stock without much root will live, and hundreds of plants sent from abroad are of this description. There may be strength enough in the stock to grow and bloom the kind upon it, but as the stock is not fairly at home, the first year is often wasted in making root enough to lay hold of the ground, and during this period the head is grown but poorly. As to blooming, there should be none allowed until the growth is vigorous, for it comes miserably poor, if at all. The second year it is more reconciled to its place, and the third may be considered a fair trial. Take the very best Rose we have, and grow it badly, the result will be bad flowers; but, if this be the case with well-known varieties, how cautious ought we to be of condemning a candidate for our favours, when we have no evidence of its real character! We have heard Rose growers say it was impossible to tell, after a removal, what a Rose ought to be, by what it is; that it ought to be tried three seasons before condemnation, and not be discarded under an idea that it is useless, merely because it flowers badly, which is not always the case. A Rose will sometimes be for several years only middling, when if it liked the ground, it would be excellent. When you have a Rose, first you should cut away all bruised parts of the root, and see that all the broken ends of the shoots in the ground, or root shoots, are smooth; then plant it the first year in good strong fresh loam, from a pasture. If rotten dung be at the bottom, so much the better, but do not let the dung touch the roots. Cut nothing back of the head or bud shoot, or if it be an established head, cut nothing back until you see the buds swelling, so as to enable you to calculate what portion is alive, and what has died back. As soon as this is indicated by the growing of the buds, cut away clean to the tree all the branches which may have perished. When these are removed, you see what head you have to depend on, and how much you may cut back without losing an opportunity of forming or improving a head for the next season. For instance, we have known all the branches but one die back, and be forced to be removed by the knife. Had the pruning at first been close, and each branch cut back to two eyes, there would be but two, of course, left on the only living one, and but two shoots could be had from them; having, however, discovered that but one branch is left, this has to be preserved somewhat longer, and therefore should be pruned to four or five, instead of two eyes. These may be managed to form branches all round the tree, or rather at such distance as prudence dictates, due regard being had to the strength of the plant. If the tree takes off vigorously, and the wood grows very strong, the bloom is pretty sure to be inferior, as indeed is the case when almost any plant runs to wood; so that it is quite as unlikely that the bloom is in character when the plant is too vigorous, as when it is too much starved. Many Roses have, it is true, been introduced most improperly. Roses with rough, thin, flimsy petals, and not enough of them; some with serrated edges, others with petals too thin to keep anything like shape in the flower; and many of the worst of them with not even a strong odour. Mr. Bircham, of Headenham Rosary, near Bungay, has been several years growing all the Roses in cultivation, for the purpose of selecting the best only; and after discarding all the varieties he condemned for glaring faults of some kind or other, his catalogue is but small. We think, however, many more Roses still cultivated may be added to the discarded list, without any disparagement to the present collections; indeed, choice as is our list of Roses in the introductory number, there are still some that could be withdrawn. The object here is not to entertain the question of general culture, but rather to offer a few useful hints on forming collections, and their first treatment; and to bring to mind that which may have struck many people before, but which has proved unerring with us, that they cannot be depended on the year they are transplanted, and especially the first removal after the working of them; that is to say, the state in which they are introduced to England, or purchased at an English nursery. Mr. Rivers, of Sawbridgeworth, Mr. Paul, of Cheshunt, and Mr. Lane, of Berkhampstead, all three extensive Rose growers, rarely let out a variety till they have tried and proved it· but still many are thought worth letting out that we do not value at all. We have looked through the collections at all seasons, and we should like to see five out of six thrown away; for a Rose bloom ought to be as independent, and as capable of being shown by itself, as a Carnation or a Dahlia. We may, at some future period, mention a few of this kind; for that Rose shall be the best, that will best bear examination as a single flower; and twelve of these, which we placed on a stand a dozen times in the summer months, looked far more interesting than any other twelve flowers we ever saw. Hybridizing has done much good for Roses, but it has also done its mischief; for, if it has introduced some splendid varieties, it has teased us with hundreds not worth growing; some which are close hard lumps of rolled-up petals, turning over their thin edges like a dog's-eared book; the backs of the petals a dull colour, scarcely any scent to them, and altogether bad openers, and bad if they can be made to open. There is no reason why the Rose should not be as perfect as the Camellia Japonica. There are some of the Bourbons, as they are called, with petals as smooth and as thick, and almost as regular; and these are the kinds to buy and grow. They hold their form longer and better than those with thin petals; they open more freely, and are better when they do open. The habits of these full-flowered plants are better; the flowers, instead of lolloping their heads down, show themselves well. All the full free opening Roses of old are of this description; witness the Cabbage Rose, the Maiden's Blush, the Provence, and some others, which are as familiar as the name of the Rose itself. It is true that the bud of a Rose is pretty, and that a bunch of Roses is pretty, but while we have good Roses that will open, and of almost every colour, it is unnecessary to grow bad ones; and if the characters of Roses are established by showing single blooms, which shall be required to be open, there will be little difficulty in doing all the rest. Nevertheless, on receiving Roses from nurseries, whether English or foreign, pay attention to these directions in the planting, and be not in a hurry to condemn. Let them fail the first season, and be even middling only the second, but give them the benefit of the doubt, and try them a third season. Convince yourself that the variety is incapable of coming better, and that you have seen their natural habit, before you throw them away. We have had all the best sorts, judging by the description of the Rose growers, and have found many that could not come better, though they were bad; for if a petal is thin and curly, rough-edged and flimsy, it can never be good; if the petals are good, but there are too few of them, there is great hope that culture will improve it from a semi-double to a perfect double, which is all that is wanted.


Tropæolum Majus.

CULTIVATION OF THE TROPÆOLUM.

If we were to commence this article by pointing out to those familiar with the household gardens of the last century the famous substitute for capers called Nasturtiums, and showing that the very common plant was and is one of the best of the tribe, some of the collectors of plants would be quite shocked at our want of taste, and think we had begun at the wrong end; we, therefore, merely state that this tribe of plants, forming of itself the foundation of a natural order, Tropæolaceæ, is nothing more nor less than the different varieties and species of Nasturtiums, long used as favourite pickles, and grown by every grade of gardeners in every species of garden, from the princely establishment to the poor man's attic window full of flower-pots. The common Nasturtium has a rich orange-coloured flower, of large size, as compared with some of the more delicate species, and has been produced from seed in great variety, from a very pale yellow, with various stripes, to a very deep red brown, approaching a black, yet all bearing the same wholesome pod of seed, which forms the object of the housewife. But familiar as this plant has been, and continues to be, as a culinary object, there are some even of this original species, but varied colour, cultivated for the sake of their flowers, as well as a double flowering kind, which is preserved by many as a green-house plant. In addition to these, however, we have some which form very beautiful objects as climbing plants, and make no small show at the exhibitions. Of these, Tropæolum Tricolorum, which is the most brilliant and remarkable, has been foremost. The plant is exceedingly small, the stems not larger than a good thread, and yet growing an enormous length (some hundred feet, perhaps), and covering sometimes (a single specimen) thirty-six square feet of trellis with its brilliant scarlet, black, and yellow flowers and delicate leaves. The flower of this species is almost like a small horn, with the stem holding it by the middle, the principal part of it a brilliant scarlet, with a black band round the larger end, and a bright yellow lip. Almost every gardener who has pretended to exhibit plants has made a point of trying his skill on the growth of this fine and delicate subject, and scarcely an exhibition has taken place without there being many of them, trained in many ways, shown as specimens or placed in choice collections. There are many seedling varieties of this species which run larger or smaller, some paler, but none brighter; and these we consider under the same head. One of the best of these is called Jarrattii, but it is simply a fine Tricolor, exhibiting no difference but the size, and that soon lost in bad hands. A more robust, and certainly a more coarse and ugly kind, but of nearly the same form, was called Tropæolum Pentaphyllum, or Pentaphyllus, according to the pleasure of different persons. The stem of this was very much stronger, the leaves larger, and the plant inclined to grow much faster; the flower was larger, but nearly the same form, a dull light

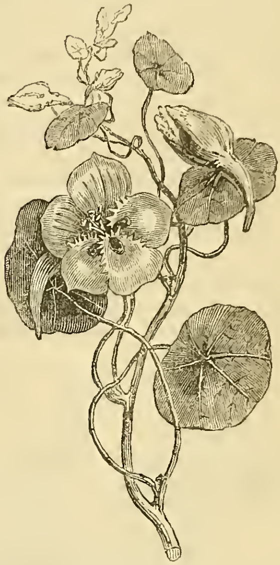
Tropæolum Tricolorum.

reddish colour, with the green hardly bloomed out, and with neither black nor yellow to relieve it. This had but a short day; for it was discarded from collections for two reasons: first, it required no skill whatever to grow it; and secondly, because, when ever so well grown, it was good for nothing as compared with Tricolorum, with which alone its shape allowed it to be compared; and when compared, its coarseness and want of colour condemned it. Both of these species are grown from bulbs, which in time grow as large as a potato; and most of the genus has been imported in bulbs. We leave the culture of Pentaphyllum out of the question, because, if the seeds were sown, as the common Nasturtium is sown, against some palings, or trellis, or dead hedge, or trunks of trees, it would grow in any soil, and pretty well cover the front of a house in a season, and when the frost killed the haulm, the bulb might be dug up to be planted next year instead of seed, and cover a house or wall again just as rapidly as any climbing plant we know. But the cultivation of the Tropæolum Tricolorum is of more consequence, and presents more room for the exercise of skill and ingenuity. If you grow them from bulbs, which are imported the size of walnuts, place them in pots the size of small forty-eights or large sixties, which will grow them, if required, right into flower upon a common stick or simple trellis of moderate size (the best place for them is a warm part of the green-house), and so form small compact plants, generally the kind of plants kept in nurseries for sale; but if you have determined to grow it as much as you can, when the strongest of the thread-like stems has grown about a foot long, take away all the weaker little spindling stems that come out from other eyes, and trust to the strongest for your plant. This is a very good time to pot your bulbs, using the loam of rotten turfs, decomposed cow or horse dung, and turfy peat, in equal quantities; the pot must have crocks in it one-third up, and the bulb need be only just under the surface. The shoots which come are at first hardly perceptible, scarcely larger than fine threads. The greatest care must be taken that they are not broken off at the bottom. When they are a foot long, the top may be pinched off; in fact, they may be shortened three or four inches. This will make them throw out lateral shoots, and you must then see that they do not get tangled; when the fibres of the root come to the side of the pot, they may be shifted at once into twenty-four sized pots, and have put to them the trellis, or other support that they are to grow upon. We think, for plants of this size, a dead branch of a shrub of a good form, like a small bushy tree, is the best; and, as they grow, you must go frequently to them, and guide their tender shoots to all the lower parts of the intended support, because it will easily fill all the upper parts by its growth, and if the lower parts be not well covered by its early growth, it will be difficult to cover them afterwards. In this form they make very pretty objects, much prettier, indeed, than any trellis could be made, because they are less formal; but if you employ a trellis, the lower parts of that must be covered first in the same way and for the same reason. It is a common practice, when they are intended to cover a large space, to fasten a slight thread of considerable length for the plant to

Tropæolum Azureum.

Tropæolum Aduncum.

run up, and, when it has grown six or eight feet along it, to lay the thread with the plant on it across or along the parts you want to fill, because it is easy to guide it without breaking; but after the bottom is well filled, all the shoots may be merely guided upon the trellis or the branch of the shrub, whichever it may be, minding at the time that they are guided to the parts which it would be least likely to fill of itself. In the case of small bulbs, such as we have mentioned, they will fill a branch which is the form of a small tree or shrub two feet high from the pot, and cover every part of it, even if it be tolerably bushy, with its delicate starry leaves and flowers. The appearance, when grown this way, is far less artificial than it would be on the best fashioned trellis that could be formed; for, when well covered, they look like a handsome shrub. In one season of growth like this the bulbs will increase considerably in size, and may the next season be grown on a much larger scale. But, although these plants are grown often from imported bulbs, they can be raised from cuttings, and grown into bulbs in a season or two quite adequate to the wants of the cultivator. These cuttings are to be taken off with great care, and cut up to a leaf (which is always at an eye), and placed in sand on the top of the same kind of stuff they are grown in. The mode of doing this is to nearly fill a pot, say within an inch of the top, with the compost, which should be levelled and settled by striking the pot against the table once or twice. On this put three quarters of an inch of silver sand, which must be levelled and watered; then, with a small stick, make a hole in the sand down to the compost, but not into it, and plant the cuttings down to it. This pot must be then placed in gentle bottom heat, and a bell glass put over the cuttings, so as to touch the sand, and keep away the air. Every morning the glass must be wiped dry. The cuttings need only be long enough to have one or two leaves above the sand. These will strike freely, but will require the greatest care to pot off, because the fibres will be excessively weak and easily broken. They should be potted off in large sixty-sized pots, because, though very small and tender, there would be danger of the small pots drying too quickly for want of more earth. Here they must undergo the same treatment as small bulbs, except that they will suffer much earlier for want of water than bulbs would, yet they must not be kept wet, for they would damp off. All the care here required will be that small sticks should be in the pot to let them run up, and it will not hurt them to top them when they get a foot long; and see that, when the pots are full of roots, they have a shift. In this way they will be grown into bulbs, and must not be disturbed at the end of the season, but remain in the last pots after the plant dies down, until they come up again in the spring. In raising them from seed, which may be saved well from good plants flowered early, the best mode is to plant the seeds an inch apart in a good-sized pot, and in moderate heat. In the ordinary stove will do, or a moderate hot-bed, not placing the seeds more than a quarter of an inch under the surface, and choosing the month of February for the sowing. When they are well up, they may be transplanted into large sixty-sized pots, and grown on the same as cuttings would be grown. Hitherto the Tropæolum Tricolorum, or Tricolor, has been the only one upon which gardeners have attempted to show their skill in training; and while showing their skill, have, for the most part, displayed as great want of taste. The plant has been shown on great round shields of wire-work, or trellises of various forms, completely artificial, and as unlike a plant as possible. If, as indeed must be the case, a plant is to be supported by something, it should be something that can be understood. If a pillar of any kind were substituted for flat round shields, which seem to belong to nothing, and perfectly out of place, it would be more natural. A column, or a portion of a broken column, would be more like nature, because it is reconcilable with common sense, and does no violence to the taste. But when flowers are trained on fantastically-formed trellises, they should be associated with nothing but what is equally fantastical. It spoils a general collection of well-grown and naturally-managed plants, to see specimens of the most



Tropæolum Minus.

unnatural forms and grotesque figures among them; and much as it shows the skill of the gardener to exhibit the Tropæolum Tricolorum on a six-foot circle (such as we have seen shown by Mr. Pawley, of the White Hart, Bromley), every inch of which was covered with its brilliant flowers, we cannot admire anything beyond the skill. Within the last two years we have had introduced an object of much solicitude among plantsmen, the Tropæolum Azureum, the Tropæolum with blue flowers, which is not of such a delicate texture as the species just disposed of, but which may, in that particular, rank next to it. The flowers are totally different to all the others; they are nearly round, of a dullish, though light blue colour, and were first shown in this country by Messrs. Veitch, of Exeter. It has hardly been long enough in this country to have been grown into specimens; but doubtless the next season will produce it at the chief exhibitions. It is one of the few plants which are selected as favourites out of the many that are annually introduced. The general treatment should be like that of T. Tricolorum. It requires green-house culture; may be raised from cuttings or seeds, though introduced by its tubers, and first grown from them. It is almost as violent a contrast as can be imagined by the side of the Tricolorum; the one a horn-shaped brilliant black, scarlet, and yellow flower, the other a pale blue round primrose-formed bloom, about the size of a shilling. Nobody who was not well acquainted with the structure of plants would for an instant imagine them to belong to the same family. The bloom in both is equally abundant, the plants not much unlike in character, but just sufficiently different to recognise out of bloom, though not much stronger. One can hardly imagine a finer contrast, unless we could increase the brilliancy of the blue. It had long been reported, and upon good authority, that there was a blue Tropæolum, but credit had been given for a much more splendid flower than this interesting plant exhibits; and there are many who do not think the present is the one alluded to by travellers, who aver they have seen one, and who represent it to be of greater dimensions, and much more splendid colour. Be this as it may, the present is considered a rare addition to our plants, and especially to the genera with which it is connected, or of which it forms a species. It was sent to this country by Mr. W. Lobb, who was collecting for Messrs. Veitch and Co., at a place called Cuesta Dormeda, about sixteen leagues from Valparaiso. It flowers in the autumn, but we suspect is quite as manageable as T. Tricolorum in this respect, and will, we expect, be shown in perfection with it. There are several other very distinct species or varieties of this genera. Tropæolum Brachyceras, from Chili, and T. Aduncum, from New Granada, have yellow fringy flowers, and grow rapidly, though their plants are slender, after the fashion of those we have mentioned last, but perhaps not so tender; indeed Brachyceras will, if transplanted from the seed-pot in May, climb and cover a house-front before the season is out, and be literally covered with its bright yellow flowers. The common Nasturtium is called Tropæolum Majus, and its varieties we have already mentioned, except a double kind, which was no doubt from seed originally, but which is now perpetuated from cuttings. As a contrast to this in size, we have Tropæolum Minus, which is a pretty well-formed flower, far better than that of Majus; and the double variety, so generally cultivated as a greenhouse-plant, is the double variety of Minus. The only kinds we should care to cultivate in the green-house are the Tricolorum and its varieties, which go by various names of persons who have raised them from seed, or who have imported the tubers, and the only difference in which appears in the size; and the blue one called Azurea. The others we should grow out of doors, on walls, or trellises, or in wildernesses, if we grew them at all. The other species we propose to mention are Tropæolum Tuberosum, which is a coarse grower, and what has been called a shy bloomer. This arises from its having been misunderstood at first. It has tubers, which multiply like a potato, and may be planted out of doors in May, after being started in pots. They grow as rapidly, and bloom as abundantly, as any sort we have. The flower is yellow, marked with veins of black; and, like most of the others, appear at the footstalk of every leaf. It is rather gay, but if we except the two or

Tropæolum Tuberosum.

three delicate growers, whose stems and leaves are small, and which form good green-house plants, there are none really handsomer than the best varieties of the common Nasturtium, or Tropæolum Majus; and especially where pains have been taken to save seed from good colours, and the best-formed flowers.

T. Lobbianum.—This new and beautiful species or variety is almost a perfect scarlet. It has but a tinge of orange about it, and though the petals are deeply indented all round, it is what may be called a round flower. It is said to be nearly related to T. Tuberosum. The character of the bloom is open, like T. Minus, opening nearly flat; and as to size, it is larger than one, and less than the other; perhaps half way between them. The leaf is like that of T. Majus, but apparently smaller. It has been exceedingly well figured in Mr. Paxton's Magazine of Botany, where the following account is given: "Messrs. Veitch and Sons, of Exeter, have introduced this plant by the agency of their collector, Mr. Lobb, who gathered it in Colombia. It has an obvious relationship with the much older and now neglected species, T. Tuberosum; and, like it, probably, it will come into distaste, in consequence of an improper course of treatment being adopted. The leaves are similar in shape to those of the common Nasturtium, but with a soft mucro at the apex. The flowers are about one and a half inch across, with fringed petals, and of a brilliant scarlet colour." The T. Peltophòrum of Bentham, discovered by Mr. Hartweg in fields near Loxa, agrees in description with this plant, except in being called an annual. The present is a perennial, and would doubtless flower most successfully in the open air, in summer, if properly managed. One good property about the plant is the abundant flowering.

Tropæolum Lobbianum.

Of this now varied family (so varied, that we fully expect by and by to have it split into more than one) there will of course be many hybrids; and if the blue and tricolor, or any of the others, happen to mix, they will form singular changes. The only species mentioned by Paxton and Lindley are:—

Tropæolum Aduncum. Yellow, blooming August; evergreen, climber.

T. Brachyceras. Yellow, blooming August; tuberous perennial.

T. Hybridum. Orange, blooming July; evergreen, trailer.

T. Jarrattii. Scarlet and yellow; green-house evergreen, climber.

T. Majus. Yellow, or orange, hardy, July; annual.

T. Majus atrosanguinum. Dark red, in August; annual.

T. Majus flore pleno. Orange and yellow. Ditto, (double); evergreen, climber.

T. Minus. Yellow, ditto; annual.

T. Minus flore pleno. Ditto, (double); green-house evergreen, twiner.

T. Pentaphyllum. Yellow orange, ditto; evergreen, twiner.

T. Pinnatum. Yellow, in June; green-house evergreen, climber.

T. Polyphyllum. Orange, or yellow, June, ditto.

T. Tricolorum. Orange and purple, July; frame evergreen, climber.

T. Tuberosum. Yellow red, September; frame tuberous perennial.

Nor is there any mention of others, except such as may be considered garden varieties.

DOMESTIC GARDENING.

PLANT STRUCTURES FOR DWELLING-HOUSES.

By this term we infer all the situations which are available by a large class of amateur cultivators, who yet have not the advantage of a regularly constructed green-house, in which to place and cultivate their favourite plants. The range of our subject is from the balcony and window-ledge, on the one hand, to the Wardian case, and even the inverted bell glass on the other; and simple as at first sight such a subject may appear to be, both in its nature and its results, we feel assured that with such means very great satisfaction may be obtained, and very much instruction, too, may be conveyed to the majority of those to whom these remarks will be made to apply.

In order that what we may have to advance may be rendered sufficiently clear and intelligible, we shall adopt a very obvious division of our subject, and treat—first, of the peculiarities of the situations which we may have to enumerate; secondly, of the kinds of plants adapted for cultivation in such situations; and thirdly, the principles by which their treatment should be regulated, so as to give some reasonable hope of a successful result; and, intermixed with these, we shall introduce so much of detail, as may appear to be necessary to fully elucidate our subject.

We commence with an enumeration of the situations in which we have to show that plants may be cultivated, and by a statement of some of the peculiarities of each.

The "most stupendous" structure to which we have to refer, consists of a very common appendage to town residences, viz. a BALCONY covered and surrounded by glass sashes, so as to enclose a space immediately in front of the windows. The first question which presents itself, in considering the fitness of such a place for the purposes of floriculture, is its aspect,—that is, to which of the points of the compass it may be exposed. On this head we may state, that flowering plants may be grown with a degree of success but very triflingly varied, under any aspect, excepting only the northern: the other aspects will vary principally with reference to season: thus, the southern will be the earliest; the western next; and the eastern the most tardy with respect to the blooming season of particular plants: this estimate of their qualifications is, however, liable to be affected by other circumstances. The northern aspect, though generally unsuitable for the cultivation of flowering plants, and the produce of flowers, is particularly suited to another, and widely different class of plants; which may be cultivated, not indeed for their gay colours, and splendid array, but for pure unassuming simplicity and gracefulness, rivalling even the "gayest of the gay." These plants are the ferns, and some allied genera. And thus we see, that whatever may be the situation, with reference to its aspect, there is no reason why it may not be adorned with the fair forms of vegetation.

The next consideration, partly indeed connected with the preceding, is the degree of light admitted to the interior, and among the plants. The aspect having a very great influence on the admission of this element, the question may be determined in a very similar manner. In proportion to the intensity of light, equally and evenly distributed, and always with certain limitations, the general result, as affecting flowering plants, will be successful or otherwise; and this is so, because light is essential to the exercise of the functions by which, partly, life is maintained; and by the *perfect* exercise of which, the floral parts are formed and developed. The ferns are a less highly developed race of plants, and hence they thrive, and attain their perfection, in situations where light is less abundantly supplied to them.

Another consideration of importance arises from the circumscribed area, which, in most instances, must be enclosed in these covered balconies; this renders the interior atmosphere liable to be very suddenly acted on by exterior circumstances; and the change which is thus wrought so suddenly in the confined atmosphere, becomes seriously hurtful, and in many cases fatal to plants. In the case of a sunburst, the atmosphere would become over heated, and the evaporation from every source of moisture, caused by this increased heat, finding egress even at the minutest crannies, would soon rob the air of its constituent moisture, and this in its turn would rob the plants of their vital juices: the effect of this would be to scorch and destroy the foliage; at best, a disfiguration, but frequently far more extensive and serious in its results. The remedy, which must be timely applied to be of use, would consist in providing a shade or screen to intercept the intense solar rays; the admission of *cooler* air, by opening the sashes; and the maintenance of due humidity in the atmosphere, by insensible evaporation from a moistened surface.

We have said nothing yet of the effect of *cold*. This being, in gardening matters, a relative term, we cannot particularize until we come to name individual plants; for what would be considered too cold a state of the atmosphere for some, would be regarded as being overheated with reference to others; we can only, therefore, speak in very general terms here of the effects of cold on plants. The first remark we make is, that a structure, whether it be a princely conservatory, or the more humble edifice we have had in view, must be devoted to a particular class of plants, having wants in common with respect to the temperature as well as the humidity of the atmosphere. The difficulty—the attention required, as well as the expense of maintaining a high temperature, are forcible arguments towards making choice of that class of plants which will thrive with the least possible degree of artificial or *applied* heat. The provision, then, which it becomes necessary to make for such plants as these, is to secure them from the effects of frost, or intense cold; this is only requisite during the depth of winter, and for a short period in the spring. A judicious choice of plants, however, which will bear a considerable declension of temperature, is by far the most important practical point, and one which most of all will be conducive to complete and satisfactory results. The means of thus far preventing the effects of cold, are very varied in practical application, though in principle they are necessarily and essentially similar. The most simple, economical, and effectual plan, would consist in attaching a hot-water pipe to the kitchen boiler, and leading it to the place to be heated; this, if provided with the necessary valves and stops, would be at all times manageable, and at all times efficient ; it might even be made conducive to ornament, if arranged so as to form a pillar, or fancy pedestal.

As we make it our especial care to notice the internal fitness of these places for their designed objects, we may also claim to direct some attention to their external appearance. We are not disposed harshly to condemn, or to speak of the taste of any one in terms of disparagement, but we have seen structures of this kind, which, to our minds, have been, to say the least, ill adapted to fill the positions they occupy. A very common character borne by these balconies, whether covered in for the purposes we have already noticed or not, is that of some portion of a Chinese building, which has been severed from the rest, and patched on in front of a modern-looking mansion. Now, as building should not only be consistent in its parts, but also as a whole ; and if it is not thus consistent, it does not possess that harmony of character and of effect, which constitutes the chief requisite of a building, to the *eye*. We have not space to enumerate instances of the bad taste we now refer to ; the above will serve to illustrate the necessity of rendering the outward appearance of a building harmonious to the eye as a mass, as well as of rendering it internally commodious, and fitted for its intended use. As general rules for the formation of our covered balconies, we may remark, that if there be any style of architecture evinced in the construction of the residence to which it is to be attached, the same style should be observed duly in these appendages ; and again, if no particular style or manner is made evident, the same neutral character should also pervade even the smallest individual parts of the general design.

An OPEN BALCONY is all the convenience for cultivating plants which many persons can command. In such situations very much cannot be attained, and the wisest policy is, therefore, not to attempt too much; yet even these may be made to minister some satisfaction to the eye. The class of plants which seem best adapted to this situation, are the hardy evergreen shrubs, which are now rather numerous, and may be made to grow with considerable success; they may thus be made to invest it with pleasing cheerfulness, at all times and seasons, even if not to adorn it with gaiety and gorgeous display. During the finer months of the year, there are many free-growing flowering plants, which will grow with considerable success, quite sufficient to justify any attempt which may be made to induce them to do so. They require, however, additional care in the winter season, and this is a point which must claim our attention as we proceed. The only thing we need mention in a structural point of view, and one which would materially aid in the growth of the plants, would be to have the balustrading either entirely closed up near the base, or so much so as to afford shade and protection to the roots of the plants, which would be liable to injury by the sun penetrating to them through the pots, and too rapidly depriving the soil of its needful moisture.

The WINDOW LEDGE will afford the means of bringing many plants to perfection, so far as situation is concerned. For such a position, however, the plants should be smaller, and altogether of a lighter character, than those which would be suitable for balconies—not only because the space is more circumscribed; but also, because being brought nearer to the eye, any degree of coarseness and imperfection, either in the character or growth of the plant, would be much more readily detected. A very great improvement, so far as cultivation is concerned, and one by no means common, is to have a facia board, or some such contrivance, in order to protect the pots and roots from the intense heat of the sun during summer; and from cutting and parching winds at other seasons.

We shall not specifically mention any other out-of-door situations available by the amateur for the growth of plants, as our province does not extend to the green-house, the pit, or the garden frame; neither will it be at all necessary to our purpose to do so, as those already referred to will be sufficient to set before the amateur a sketch of this part of the subject of window gardening.

We propose, however, to look inside, as well as outside of the window; for in this situation, too, plants may be very successfully grown: but here we are introduced to a new class of subjects, much more delicate in their nature; more interesting, too, in the minutiæ of their structure and appearance, though perhaps not more beautiful or attractive in their forms and colours.

The interior of LIVING ROOMS is not in general well adapted for plants;—the fluctuating temperature, the confined and arid atmosphere, the obstructed light, are all causes, which both severally and unitedly are productive of more or less of injury to the plants, according as they exist, either powerfully or in a more subdued degree. The excess of heat which sometimes prevails, acting in conjunction with the deficiency of light, causes so much excitement in the vegetable frame, as to result in the long-legged, drawn-up specimens, which in-door plants frequently are. This evil is somewhat mitigated in its effects by the aridity of the atmosphere, which, in itself, tends rather to obstruct than to excite continued growth; but, acting in conjunction with other causes, and viewing its effects not with reference to this particular point, but to its general influence on vegetable development, it may be regarded as being the principal source of the difficulties which attend the growth of plants in the interior of living rooms. This situation, from the same cause, is also unfavourable to the preservation of many—perhaps the majority—of species, when they have elsewhere been brought to a blooming state, and are removed to it for the purpose of decoration. A living room, therefore, should be regarded as a position in which plants should not be kept for any lengthened time; but only for particular purposes, or on occasions of necessity.

When, however, such plants as are kept in the interior of rooms are enclosed within a case, or other structure, which is pervious to light, and at the same time will allow of being kept closed, so as to confine a portion of the atmosphere, which then becomes more thoroughly imbued with moisture, very much of the objection in the way of cultivation is removed: the surface of the soil which is enclosed gives out by evaporation a portion of its moisture; and this becomes united with the other constituents of the atmosphere, thus counterbalancing the aridity we have spoken of as being so detrimental to vegetable life. This will go on without giving rise to any trouble or care for a considerable time, if the structure is comparatively close; because then the escape of moisture is very trifling, and consequently it is not soon exhausted. Under ordinary cases, a slight increase of heat causes this evaporation; and then again, a fall of temperature induces the deposition of moisture, which is thus alternately evaporated into the air, and in a condensed form again returned to the soil. By this arrangement, almost all plants *can be grown* in rooms, provided the temperature, the moisture, and some minor points, are duly regulated; but as the space is necessarily limited at which light can be obtained and admitted, and as this is an essential in the growth of plants, so it necessarily follows that these structures are much restricted as to their size, and the number of plants which can be accommodated is proportionally limited also: hence, it is only plants of considerable beauty, and small size, or others of much singularity or interest, which can be attempted to be grown. It is, however, sufficiently gratifying to know that there is a considerable choice of plants which possess every qualification that can be desired.

Structures of this kind have, of late, come much into use under the name of WARDIAN CASES: they are generally made quite plain, with a span top; sometimes quite closed, and at others with their covers removable. Their principal advantage, in a cultural point of view, consisting in their preserving a moist atmosphere about the plants, these trifling differences of structure are not of much importance, so long as they are kept closed sufficiently to effect this purpose. The question of structure becomes, therefore, one of design and taste. We feel somewhat disposed to differ with those who prefer the ordinary plain construction, principally because they are intended to occupy prominent and conspicuous positions; on that account, we think them deserving and entitled to a greater expenditure of design and of decoration in their construction. We would have a much more evident and obvious *design* to be manifested in them, because they are avowedly intended for ornamental purposes; and however beautifully and vigorously the plants may grow within them, we cannot but regard such extreme plainness of outline as very detractive from the general ornamental effect. We greatly prefer the adoption of such forms as those of ancient or classic temples, or other buildings, either ancient or modern, which display architectural skill and beauty. There are many of these whose forms would offer no obstruction to the accomplishment of this purpose; and thus, whilst they would serve as objects of intense interest, as being models of famous buildings, of which the originals, perhaps, have long since been mouldering in the dust, but whose record has been preserved in the archives of classic literature, they would, at the same time, serve for the culture and protection of plants, whose beauteous forms and colours would not be lessened by their being exhibited in connexion with the chaste and elegant lines of pure architecture. Existing or recorded structures, too, devoted to the culture of plants, whether domestic or foreign, if at all suitable, might be adopted as guides, both in designing and executing them; and these would not be altogether devoid of interest on this ground alone, whilst they would be equally suited for the purposes intended.

The exercise of architectural taste might here have ample scope for its exhibition, in the formation of new designs, which should be in character with the general aspect of the scenery they were intended to accompany. We cannot believe that attention to these points would add so greatly to their expensiveness, as to prevent them, on this account, from being as generally, at least, in request as formerly: indeed, the difference in this respect can be but trifling; because, so long as the principal and obvious features of the architectural character were preserved, much of the decorative and ornamental parts might be dispensed with altogether.

We are not aware that cases of this description have ever been much used for the purpose of preserving plants in bloom, which may have been brought to that state in other situations, and have been removed into sitting-rooms for the purpose of decoration; yet it is hardly possible to conceive any contrivance which is better adapted to preserve the beauty of such plants, by prolonging their period of blooming. The very same cause which renders the air of living rooms so unsuitable for the preservation of cut flowers, is equally pernicious with regard to the preservation of expanded blooms on living plants; and we know of no contrivance which, at the same time that it preserved the blossoms themselves, would more fully or satisfactorily permit the perfect enjoyment of them, and secure the safety of the plants which produced them. When they are constructed with a view to being used for such a purpose, it will be necessary to provide them of a suitable size for the plants intended for them; and in cultivating these for such a purpose, the same consideration as to size is necessary, in order that they may be made to assume a neat and artistical effect when adjusted for display. In connexion with this, we must not omit to mention, that whilst a due share of light is no less essential to the preservation of flowers than to the cultivation of plants, the former require some degree of protection from the intense sun-rays of mid-day in summer, in order to prevent them from falling prematurely.

We should here mention, that any contrivance which admits light, and confines the atmospheric humidity, is the same in principle as that we have been examining; and is, according to its size, equally adapted for the purposes of cultivation.

VEGETABLE PHYSIOLOGY AND BOTANY.*

THE complaint which we have most frequently to make against the authors who favour us with treatises is, that they begin their works as if every reader were fully acquainted with the science about to be explained, up to a certain point, as though their sole business were to lead us onwards. An objection scarcely less tangible is, that information intended or avowedly provided for the multitude, is so clogged with the technicalities of science, that every one had need undergo a sort of college drilling to understand them. Dr. Carpenter does not lay himself open to either of these charges. He professes to deal popularly with scientific matters, to let the multitude in at the large folding doors, instead of crowding along a narrow dark passage, and to give us the benefit of his best lighted apartments, a reception at his scientific *soirée*, without subjecting us to a long and dreary pilgrimage through dull and mysterious avenues, which are the only approaches to the assemblies of his neighbouring or fellow professors. It may be that some of the beautiful and intricate passages of a favourite composer are not equally appreciated by all the visitors; it may be that some of the paintings which adorn the walls, although beautiful, do not throw us all alike into ecstasies; and that some of the books and prints which cover his tables, and set connoisseurs longing as well as admiring, are not equally interesting to all the party; nay, some of the conversation may not be so delightful to tyros as to other of the company; but we may all indulge, to the full bent of our minds and capacities, in the delightful entertainment provided for us, without a previous purgatory in the school of druggery, through which some insist all shall make their way to the more stiff-starched *conversaziones* which they provide.

Vegetable Physiology, as generally treated, is a stale subject; stale, because all writers upon it are imitators; stale, because they all tell the same humdrum tale in the same technical language, and illustrate it with the same series of wood-cuts that have run the round of all the Physiological works from our great great grandfathers downwards. Dr. Carpenter has avoided this, and has given us, in plain familiar terms, some idea of the structure of plants, and very many beautifully executed sketches to illustrate the subject.

To go into the merit of this work more seriously and less figuratively, Dr. Carpenter professes to give us scientific information in a popular form, that those may enjoy it who have neither the leisure nor the inclination for study. The author is no atheist to begin with: he says truly,

> "The beneficent Creator of all has not only ordained that every part of His works should be *good*—should be adapted to answer its designed end, and should contribute in the highest degree of which it is capable to the well-being of His creatures;—but He has made every thing 'beautiful in its season,'—He has so formed the mind of man, that it derives pleasure from the contemplation of the glorious works around him. And it is, therefore, a worthy employment of our faculties to encourage this pleasure, and to place it upon a more solid and extended foundation than that afforded by the mere forms and colours of the objects around us, however beautiful these may be."—Pp. 1, 2.

In stating the nature of his work, he says,

"The object of the following treatise will be, therefore, to lead those who may be disposed to adopt our recommendation, to a pursuit which cannot fail to prove a source of interest and improvement. *It will be adapted as much as possible to such as have no previous information on the subject*, beyond that which all young persons of ordinary capacity may gain by themselves; and it will omit, therefore, several topics of high but less general interest, which those who feel inclined to examine them will find fully treated elsewhere."—P. 4.

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* Vegetable Physiology and Botany. By Dr. Carpenter. 8vo. London: Orr & Co.

The first chapter treats of the general characters of living beings, and the distinction between animals and vegetables. The second contains a general view of the vegetable kingdom, and here all the classes of plants, down to the smallest fungi, are ingeniously and familiarly described: and speaking of fungi, we are struck by the relation of a fact worth quoting.

"The power of expansion," says the author, "which these plants possess, soft as their tissues seem, is truly wonderful. Some years ago the town of Basingstoke was paved; and not many months afterwards, the pavement was observed to exhibit an unevenness, which could not be easily accounted for. In a short time after the mystery was explained; for some of the heaviest stones were completely lifted out of their beds by the growth of large toadstools beneath them. One of these stones measured twenty-two inches by twenty-one, and weighed 83 lbs.; and the resistance offered by the mortar which held it in its place would probably be even a greater obstacle than the weight. It became necessary to re-pave the whole town, in consequence of this remarkable disturbance."—P. 55.

Chapter III. brings us to the elementary structure of plants, and here the illustrations greatly assist in making the subject clear and intelligible. From this the author proceeds to the structure of the roots and stem, next the food of plants, and the manner in which it is obtained. The structure of leaves and flowers occupies a very large portion of the work, and is as familiarly explained as the subject is capable of being explained. There is, throughout the volume, much to entertain and instruct both young and old. Upon the subject of the vitality of seeds, which is too often used as proofs of spontaneous generation, there is much to interest the reader. The following are specimens:—

"Instances are of no unfrequent occurrence, in which ground, that has been turned up, spontaneously produces plants different from any in their neighbourhood. There is no doubt that, in some of these cases, the seed is conveyed by the wind, and becomes developed only in spots, which afford it congenial soil. Thus, it is commonly observed, that clover is ready to spring up on soils which have been rendered alkaline by the strewing of wood-ashes, or the burning of weeds, or which have had the surface broken and mixed with lime. But there are many authentic facts, which can only be explained upon the supposition that the seeds of the newly-appearing plants have lain for a long period imbedded in the soil, at such a distance from the surface as to prevent the access of air and moisture; and that, retaining their vitality under these conditions, they have been excited to germination by exposure to the atmosphere.

The following possesses considerable interest:—

"To the westward of Stirling, there is a large peat-bog, a great part of which has been flooded away, by raising water from the river Teith, and discharging it into the Forth; the object of this process being, to lay bare the under-soil of clay, which is then cultivated. The clergyman of the parish was on one occasion standing by, while the workmen were forming a ditch in this clay, in a part which had been covered with fourteen feet of peat earth; observing some seeds in the clay, which was thrown out of this ditch, he took them up and sowed them; they germinated, and produced a species of Chrysanthemum. A very long period of years must have probably elapsed, whilst the seeds were getting their covering of clay; and of the time necessary to produce 14 feet of peat-earth above this, it is scarcely possible to form an idea; but it must have been (in the natural course of things) extremely great.

"The following circumstance, which occurred about 30 years ago in the State of Maine, in North America, is, perhaps, still more remarkable. Some well-diggers, when sinking a well, at the distance of about 40 miles from the sea, struck, at the depth of about 20 feet, a layer of sand: this strongly excited curiosity and interest, from the circumstance that no similar sand was to be found anywhere in the neighbourhood, or anywhere nearer than the sea-beach. As it was drawn up from the well, it was placed in a pile by itself; an unwillingness having been felt to mix it with the stones and gravel, which were also drawn up. But when the work was about to be finished, and the pile of stones and gravel to be removed, it was found necessary to remove also the sand-heap. This, therefore, was scattered about the spot on which it had been formed; and was for some time scarcely remembered. In a year or two, however, it was perceived that a great number of small trees had sprung from the ground over which the sand had been strewn. These trees became, in their turn, objects of strong interest; and care was taken that no injury should come to them. At length it was ascertained that they were Beach-Plum trees; and they actually bore the Beach-Plum, which had never before been seen, except immediately upon the sea-shore. These trees must, therefore, have sprung up from seeds, which had existed in the stratum of sea-sand pierced by the well-diggers; and, until this was dispersed, in such a manner as to expose them to the air, they remained inactive. 'By what convulsion of the elements,' adds the narrator, 'they had been thrown there, or how long they had quietly slept beneath the surface of the earth, must be determined by those who know very much more than I do.'

"The following is an example of the same general fact, which is interesting from its connexion with historical events. In the year 1715, during the rebellion in Scotland, a camp was formed in the King's Park (a piece of ground belonging to the castle) at Stirling. Wherever the ground was broken, broom sprang up, although none had ever been known to grow there. The plant was subsequently destroyed; but in 1745, a similar growth appeared, after the ground had been again broken up for a like purpose. Some time afterwards, the park was ploughed up, and the broom became generally spread over it. The same thing happened in a field in the neighbourhood, from the whole surface of which about nine inches of soil had been removed. The broom-seeds could not have been conveyed by the wind, although the plant is a common one in the neighbourhood, because they are heavy and without wings; and the form of the ground is such, that no stream of water could have transported them, or have covered them afterwards with soil. Such an effect must have resulted from the operation of causes, continued through a long period of time."—Pp. 289—291.

These extracts give some notion of the entertaining manner in which the author conducts us through a subject which has hitherto been presented to us in the most uninviting form, and clothed in technicalities which rendered it absolutely forbidding; we wish Dr. Carpenter success in his attempts to familiarize the unlearned classes with the beauties of science; and we may congratulate him upon having done much towards enlightening those who have hitherto been, as it were, shut out from it.

The botanical department consists of an explanation of the Linnæan classes and orders, with, in some cases, brief, but always comprehensive, descriptions of the numerous families comprised in the natural orders and groups. The following is a portion of the description of the natural order Orchideæ, with which we must conclude our extracts:—

"The plants associated with the common Orchis in this order, exhibit some of the most curiously-interesting modifications of structure, that any group in the vegetable world affords. Most of them are remarkable for the resemblance between their oddly-shaped flowers, and various objects with which they may be compared; thus two species of this country are known as the Bee-Orchis and the Fly-Orchis, from the similitude between their flowers and those insects; whilst others are known as the Man-Orchis, the Lizard-Orchis, and the Lady's Slipper. In some foreign species there is an equally strong resemblance to large and splendid butterflies and other insects; one, again, reminds the observer of a grinning monkey; whilst another resembles an opera-dancer suspended by the head. The Orchideæ of Europe grow on the ground, in meadows, marshes, or woods; and they are justly considered as among the most curious and beautiful plants of its Flora. But it is in tropical countries, in damp woods, or on the sides of hills, in a serene and equal climate, that they are seen in all their beauty. 'Seated on the branches of living trees, or resting among the decayed bark of fallen trunks, or running over mossy rocks, or hanging above the head of the admiring traveller, suspended from the gigantic arm of some monarch of the forest, they develop flowers of the gayest colours, and the most varied forms, and often fill the woods at night with their mild and delicate fragrance. For a long time such plants were thought incapable of being made to submit to the care of the gardener; and Europeans remained almost ignorant of the most curious tribe in the whole vegetable kingdom. But it has been discovered of late years that, by care and perseverance, they may be brought to as much perfection in a hot-house as they acquire in their native woods; and they now form the pride of the best collections in England.' It is chiefly in the almost impenetrable forests of South America that the *epiphytic* species (those that grow upon the surface of trees) are found; but in the hot damp parts of the East Indies, other kinds are very abundant. Some epiphytic species are known as air-plants, from their power of vegetating when simply suspended in the air, without any soil or any direct supply of water, supported only by the moisture of the atmosphere; so that, when hung up by strings from the ceiling of a room, they will live for weeks, and even months, and will go on blossoming luxuriantly. Hence they are some of the most favourite ornaments of the houses in China and Japan, of which countries they are natives."—Pp. 515—517.

"It is remarkable that in a group so numerous as this,—consisting as it does of nearly two thousand known species, and of probably as many more which, being buried in the depths of unexplored tropical forests, have not yet been described,—and extending over almost the whole habitable globe, as far as the borders of the frozen zone,—there should be so few species possessed of properties that make them in any way useful to man. It often happens that the most powerful virtues, or the most deadly poisons, are hidden beneath a mean and insignificant exterior; whilst those productions of nature which charm the eye with their beauty, and delight the senses with their perfume, have the least relation with the wants of mankind. So it appears to be in this instance. The aromatic substance called *Vanilla*, which is sometimes used as an ingredient in chocolate, also to flavour sweet dishes, and to perfume snuff, is the succulent fruit of an Orchideous plant, which, in the West Indies, creeps over trees and walls like ivy. A nutritive substance termed *Salep*, somewhat resembling arrow-root or sago, is obtained from the tubers of a species which grows in Turkey and Persia, where it is highly esteemed. It used to be sold at the corners of the streets in London, and was a favourite drink with porters, coalheavers, and other hard-working people, by whom it was considered very strengthening; and the comparative disuse into which it has fallen is perhaps to be regretted. It is said to contain a greater amount of nutriment in the same bulk, than any other vegetable substance; and for this reason it is much employed by travellers, who have to carry their supplies with them into deserts and uninhabited countries. So high a nutritive power has been assigned to it, that it has been asserted that one ounce of salep, boiled with an equal quantity of the stiff glue or animal jelly known as portable soup, in two quarts of water, will suffice for the daily nourishment of an able-bodied man. Some of the South American species contain a viscid substance, which, when separated by boiling, serves as a sort of glue, which is used by the Brazilians for sticking together their skins of leather. There is scarcely any other way in which this order is of any direct utility to man."—Pp. 521, 522.

Our readers will now be able to judge for themselves of the value of a volume written fairly down to common understandings, but leading their thoughts to the highest objects in the natural history of the vegetable kingdom.

MYATT'S PINE STRAWBERRY.

The difficulty experienced in growing the Myatt's Pine Strawberry has induced many, more or less successful, attempts at *new and improved* modes of growing the Strawberry. A number of these plans have been published in the horticultural works of the day with some advantage; and therefore I write a short, but I hope plain, account of a plan I have followed with the best success in cultivating Myatt's Pine and other Strawberries. It is in some respects different from any I have seen adopted or recommended. In spring I choose the compartment where I intend to grow my Strawberries—I do not care whether it be heavy loam or light, as each have their peculiar advantage, and Strawberries will do in either; and having divided or marked it into three feet longitudinal divisions, and laid a *heavy* quantity of well-made dung on every *alternate* division or space, I then proceed to well trench these *dunged* divisions, where, if I chance to be scant of ground for my vegetable crops, I plant a row of potatoes, or sow turnips, broadcast, on these trenched divisions. Having got these crops removed in time, I, early in autumn, soon as I can get rooted runners, plant two rows of runners or young Strawberry plants along each prepared space. These rows I keep nine inches from the edges of the outer beds, and consequently eighteen apart in the beds, while the plants are placed pretty close, say a foot apart in the rows. Next summer, having got a small crop from these plants, I induce a sufficient number of runners to root in each of the nine-inch spaces outside, but *none* in the eighteen-inch spaces between these rows.

In autumn I cut away all superfluous or misplaced runners, and—contrary to the dictates of theory—the foliage from the old plants. These runners and leaves I dig into the eighteen-inch spaces between the old rows; at the same time, or next spring, I dung and trench the vacant three-feet spaces (laying a little soil as top-dressing over the denuded plants), on to which spaces I encourage runners from both sides, until I have thus, in the third year, a young plantation, placed at the same distances, and in the same manner, as I had on the first occupied, on what was hitherto unoccupied spaces; and in the fourth year the earliest planted rows are dug down, the first established runners are in full bearing, and the last rooted ones are bearing a first crop. In the fifth year the relative proportions of occupied and vacant ground are the same as they were the first year, that is, equal, with this difference, that the plants in the occupied spaces are fully established and in full bearing.

By this mode of culture Strawberries may be grown for an indefinite length of time on the same quarter of ground, and that without a single season's loss of crop, or having the plants too old either; as the plantations are completely but gradually shifted from occupied to rested and enriched ground every four years. Some kinds of Strawberries will undoubtedly do as well by other modes of culture, not so the Myatt's Pine; I may venture to say, at least, I never saw it do well by any other mode, and I never saw it fail when grown this way. John McDonald.

FUCHSIA FULGENS,

(GROWN AS A STANDARD.)

Various are the modes of treating this plant, but there is only one way in which it is really handsome; for its broad coarse foliage gives it a common appearance, and the blooms are always crowding one another; they hang in bunches like tassels of ordinary fringe, and unless the branches recline, they are in each other's way. Henry Ford, of Willow Hall, some years since, gave his mode of doing them. He says, in one of the works of that day (February, 1840):—

"Those who have not cut down their last year's plant, should cut it down to the mould immediately, turn it out of the pot, and shake all the old soil from the root of it, and re-pot it in as small a pot as the root will conveniently go in, in a mixture of equal parts of good turfy loam from a pasture, and old decayed manure that is nearly gone to mould: to every spadeful of the above, add about one handful of Calais sand, the whole should be dried for a few days in a shed, then, broken fine with the back of the spade, it will be ready for use. Observe, when potting, there should be a good drainage of rough pieces of turf. When potted, they should be taken into the stove, or, if the grower have not a stove, a cucumber frame at work will do; when it has begun to shoot, all the shoots must be taken off but the strongest, which should be trained upright to a stick as it grows; as soon as it begins to show bloom trusses, take it into the green-house, where it can have the full sun, keeping it near the glass. Observe, it must be re-potted into one a size larger several times while growing; if it is doing well, its fibres will come through the top of the mould; the same sort of compost will do for every shifting; it should be freely supplied with water when getting bud; if allowed to flag for want of water it will receive an injury which cannot be recovered that season.

"I shall now give a description, as brief as I can, of one of my plants last year which were treated in the above manner. The plants were between four and five feet high from the root, on a straight stem, with a fine round head, measuring nine feet six inches round; they commenced flowering the first week in May, and continued in flower till October, and long after then were loaded with delicious fruit; but they were the most beautiful in June and July: they had several hundred blooms out at one time in trusses from twenty-five to fifty blooms each. I have also bloomed small plants of it with equal success: even on plants not more than eighteen inches high I have had a hundred flowers. I planted a few seedlings in the flower borders in June, and in September several of them flowered very fine, the roots of which I left in the ground unprotected from the weather, and they are now as sound as those kept in the green-house. I believe if good strong plants were put out in June, in a good rich sheltered border in the South of England, they would flower as fine as even in the green-house."

Now the objection we have to this plant is, its coarse, lilac-bush-like appearance; and there are no directions here as to how this straight stem is to be got five feet high without having side branches, although at reading a portion of the description, it would appear it had become a standard. The standard fashion is the only true mode of growing this plant to look well, and in that, if the form be not carefully managed, it is ugly instead of handsome. The particular management begins when the single stem begins to shoot up; for, besides all that has been directed, the side shoots have to be rubbed off, or cut off, as the stem advances, always preserving the few upper ones. Say that six upper pair of leaves, with any lateral shoots that come from their base, must be preserved all the while. It follows, therefore, that when a pair of fresh leaves have perfected themselves, the lateral branches shooting from the base of the lower pair may be neatly cut out without damaging the leaves themselves, and this must be continued until you have the stem as tall as you wish, say five feet from the surface of the pot to the top pair of perfect leaves, and then pinch out the top bud, to prevent any more from perfecting, and to make the lateral branches at the six pair of leaves already on the top throw out stronger. When these have grown some time, cut back the whole six to two pair of leaves each; this will induce a considerable number of lateral branches to grow, for as each of the six pair of leaves will produce generally a lateral shoot, the first growth after topping the plant will be twelve shoots, and these twelve shoots being cut back to form leaves, will produce a lateral; it follows that you will have forty-eight branches to form a head with. As one-half the number will do, cut out such as awkwardly cross one another, and are in one another's way, and leave only as many as will form a handsome head, growing equally all round; these must be well grown, and the longer they grow the more will they droop. The consequence of all this will be, that strong bunches of bloom at the ends of all the branches will hang down completely below the foliage, and present the only pretty object that can be made of the Fuchsia Fulgens. A little practice will enable you to make the shape almost what you please, for all that you have to attend to is the fact, that wherever you stop the growth by pinching off the end, laterals will come out; and that if you keep doing this too much you will have no bloom, because in each case you remove an end that is growing to maturity and bloom, and induce many new branches, which having all this growth to make, may not have time to do it. Another mode of growing these standards is, to retain the old stem, instead of making it grow from the bottom. We have seen a standard five feet long in the stem, and the under part of the large head completely hung with the scarlet tassel-like bunches, which distinguish this plant from all others of the family. We have said nothing about the shifting from pot to pot, and the other management of the plant in its progress, because we give Mr. Ford credit for having, in these particulars, given ample directions.

FLOWERS NOT IN CHARACTER.

As fruit trees do not adjust themselves to bearing until the root and the head have settled down into a sort of mutual agreement as to demand and supply, so also flowers never come to the proper characters until the root and the plant, after being disturbed in their proportions by removal, recover their relative positions. Hence, let us take a half-rooted off-set of an Auricula, throwing up a bloom, it will be found no more like the proper character than any other sort. Hence take the weakly struck cutting of a Pansy, and you will perhaps see a flower no more like the original than a cabbage is like a potato; then take the premature blooms of the Dahlia, and you would not know what it was meant for, even if it condescended to come double at all, which is more than they will always. No matter by what the balance of power has been destroyed; no matter what the flower is, the apologies for bloom are as surely out of character as the plant is out of order. When the Dahlia has exhausted itself by flowering, the blooms come out of character; when the Pansy is allowed to spread and grow in all directions, the flowers come out of character; and if it were still longer allowed to transgress and grow neglected, it would degenerate down to the meanest of the small flowers. The Auricula sometimes throws up blooms in autumn; how rarely would they be known by their flowers! And how happens all this? The juices of a plant require elaborating as much and as perfectly to produce a flower in perfection as they do to produce fruit. The plant which bears our favourite Polyanthus is as perfect as an oak, and has its wants, which must be supplied as surely as those of the "Hale Green Tree." Lessen the supply of moisture, and it droops; excite it too much, and it grows rapidly, and detracts from the bloom, if it does not actually blight it. But, the blooming of flowers out of character has led to many singular misunderstandings; we have seen a Pansy returned "because it was wrong," when in fact it was precisely what was wanted. We hardly know a flower so ticklish in this particular as the Pansy; for, until it gains its full strength, it will keep coming wrong, or rather, it will continue to bloom unlike its proper colour and character. In fact, but for some leading features, familiar to florists, always remaining visible, and it would be impossible to even guess what varieties they were. And it is perhaps one of the most curious of the facts connected with flowers out of character, that they do not even retain their form. The Pansy, Geranium, and Tulip, are all remarkable for this. Some Tulips, when nicely bloomed in fine colour, come with short cups, and generally what may be called fine form. Let these, from some unexplained cause, come more deeply coloured, that is, more of the breed or colour in them, and we find the cup longer, the petals more pointed, and perhaps even the flower itself foul. Let a Geranium get unhealthy or out of character, and we shall find narrow instead of broad petals, a long instead of a round flower, and half the colours wrong. So it is with a Pansy; a flower is long and crumpled instead of round, the under petal notched instead of smooth, the edges of the flower, all round, serrated instead of even; and though there may be in all these some peculiarities which betray them to the florist, who is familiar with every point, not one in a hundred would be able to tell what kinds they were.

THE PELARGONIUM.

The Pelargonium is one of the most universally cultivated and admired green-house plants we possess in this country, and upon which so much has already been written, that an apology is almost necessary for writing more. These papers, however, are not addressed to those who, having unlimited command of means, can adopt all or any of the system recommended, but to those only who have to depend upon a frame and green-house for every operation; but who, I believe, might grow the Pelargonium sufficiently well to compare or compete with those grown by the possessors of more ample means and structures. To begin with the beginning, as the operation is proper for this season of the year, I shall "firstly" say a few words about

SOWING THE SEED OF THE PELARGONIUM,

which is a simple enough operation, requiring, of course, as a first condition towards success, that the seed be good, which it may be if it has been saved, *full ripe*, *last autumn*, gathered dry, and kept in the pod, wrapped in paper, and stored same way as flower seeds in general; or—and perhaps it is a better way—the naked seeds may be laid in six or ten times their own bulk of powdered charcoal in a wooden pill-box. Then, have prepared a seed-pan, or wide shallow flower-pot (of size suitable to the quantity to be sown), in the proper way, that is, let it be filled nearly one-third full of crocks, and over these, till within half an inch of the brim of the pot, with soil composed of equal quantities of loam from decayed turf and grassy herbage, leaves thoroughly decayed into mould, and clean sand. These ingredients being thoroughly mixed and *slightly* pressed in the pan, the seeds are to be sown regularly on the surface, and then *covered*, but not *buried*, with a little quantity of same soil; over which a thin layer or stratum of moss is to be placed, and then slightly sprinkled with milk-warm water, in which a little sulphate of ammonia or superphosphate of lime has been dissolved; which sprinkling ought to be repeated at intervals as occasion may require, taking particular heed that the soil is never *soaked*, nor yet allowed altogether to become dry. When the covering of moss is used, neither of these errors can scarcely occur, except through very extreme carelessness. Where the convenience of a *moderately* warm frame can be had, it would be a proper place to start the seeds in; but where such conveniences cannot be had, the seeds may be started very well in the greenhouse, when the best way will be to place the pot or pan in which the seeds are sown, within another pot or pan large enough to admit of a quantity or coating of moss being placed around the seed-pot, and within the larger one, which coating of moss, like that over the seed, ought to be kept constantly moist. As soon as the seedlings are large enough to be conveniently handled, they should be transplanted singly into sixty sized pots, or—and perhaps it is a better way—by threes into forty-eight sized pots. The soil to be used for this shift should be loam (same as used before) three parts; decayed leaves, one part; dung rotted into mould, one part; sand, one part; wood-ashes, one part. These ingredients to be intimately mixed, but *not sifted*.

If the seeds have sprung freely—if damp have not spotted or injured the leaves—if things have gone on ordinarily well, some of these plants will have to be shifted twice again ere the middle, or, at latest, the end of summer; and, if left uncut, will probably flower in August or September. But, as the flowers produced at that late season ought not to be depended upon, nor taken as a fair sample of what the flower would be in its proper season, it would certainly be most advisable, at any time from Midsummer to the middle of August, to

CUT OVER THE PLANTS,

leaving from two to six eyes or buds to the cut down plant,

MAKING CUTTINGS

of such shoots and pieces of the cut off tops as are fit for that purpose. As every person who knows anything about the Pelargonium must know that cuttings of it root freely as does the willow, I need, therefore, say but little about the process of "striking;" merely observing, that the best cuttings are those tips of shoots having no flower-buds formed on them: the cutting ought to be short-jointed, and have four eyes or buds. It ought to be in the transition state from watery succulency to moderate firmness of texture; it ought to be cut clean through, directly below the undermost eye, from which eye the leaf ought also to be cut. The cutting then to be sunk pretty firmly into the soil, up to, but not *altogether covering*, the next or second eye from bottom. The soil into which to strike these ought to be sandy loam, and the situation in a nearly spent cucumber bed, in a warm part of the open border, or even in the green-house, observing merely, as a very necessary caution towards success, that there be *two* coverings of glass over the cuttings; that is, a hand-glass over them below the frame-sash in the frame; two hand-glasses, a large one over a small one, in the open border; or a bell-glass, in the green-house. Shade the cuttings from intense sunshine during the first ten days, after which—as they will by then be beginning to emit roots—they may have light, air, and water in greater quantities.

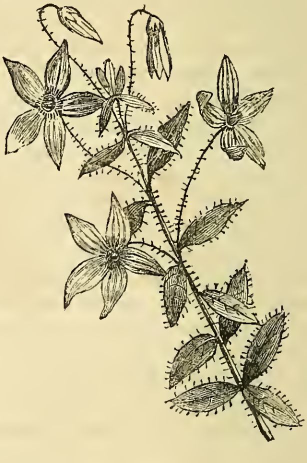
ROOTED PLANTS,

whether cut-over old plants or rooted cuttings, will cost but little trouble from the time their flowering is over in the summer, or early autumn, until they are started into growth next spring, requiring merely the cut-over plants to get a slight shift immediately they are cut over, and raising the soil a little higher up the stem of the plant than it was. A liberal supply of soft water, and as much light and air as possible. Cuttings to be potted, as soon as rooted, singly into forty-eights. In wintering Pelargoniums, it is only necessary, for the keeping of them in perfect health, to give them a temperature of from 35 to 45 degrees Fahr. *Air and light in abundance, and water rather sparingly.*

Some people keep shifting and growing, or rather *forcing*, the Geranium all the winter; but as the trouble, anxiety, and expense incurred by such a process can never be properly compensated by the result—a drawn plant, a scanty bloom, and abundance of green-fly—it is not likely the plan will ever become a general one.

February, or even March, is a much better and more rational season for starting the Geranium into activity. A plant wanted to flower at or before Midsummer, ought now to be shifted into a twenty-four sized pot; and again, in April or beginning of May, into a sixteen or twelve size. The soil to be used on these occasions ought to be composed of three parts loam, two parts thoroughly rotten dung, one part decayed leaves, one part wood-ashes, one part sand. A plant grown on this plan will not by Midsummer, it is true, be large as a ten-year old gooseberry bush; yet, if the most forward shoots be stopped before the beginning of April, and a *very little* nitrate of soda, or "Humphery's soluble compound,"—which is much better, though dearer,—applied among the water when the plants are beginning to show bloom, they will flower well, having their flowers large and of fine colours. If fire heat be employed—as undoubtedly it will need to be during the generally, and often severely, cold months of March and April—the fires ought to be applied *principally during the daytime*, for the twofold purpose of enabling the grower to admit as much as possible of the indispensable agent, air; and to give the plant its proper cool—not cold—night's rest. If green-fly should make its appearance among the plants, fumigation with tobacco should be resorted to; but syringing with cold water ought to be done *but as seldom as possible;* as, though the Geranium certainly does, if grown in a proper soil and properly drained, not require a great deal of water at its roots, it as certainly is injured by frequent syringing overhead.

One word now about growing large specimens, which is a very simple and easy matter, effected thus, at the cost of a year's bloom:—In February shift your plant at once into a sixteen sized pot, and, as the shoots advance, pinch back some and tie up others, as may suit best, to promote the desired shape of the plant. Again, in May shift the plant once again, and for the last time, into an eight sized pot. A plant so treated will, at the end of summer, present the appearance of half a sphere of ten to fifteen feet in circumference; the branches will be stout and short-jointed; the foliage will be large and dark green, dense, and hiding soil, stakes, ties, &c.; the bloom, however, will be scant, *if any*, that season; but, during the next *and two following* seasons it will flower well and abundantly without any further shift; merely requiring to be cut back after flowering every summer, top-dressed and have the drainage examined, and decayed roots, if any, cut away. I have tried the plan with Rising Sun, Grand Monarch, Madeline, Favourite, Nymph, Constellation, Nestor, Sapphire, Bridesmaid, Symmetry, Flush, Fair Maid of Devon, &c., and found it to answer admirably well, the plants being literally covered with a sheet of bloom; the flowers being individually smaller, perhaps, than on younger plants having fewer trusses, thinning out the trusses would undoubtedly remedy that fault. But, except for the purpose of exhibition, quantity of bloom is generally more desired than size.—J. McDONALD.



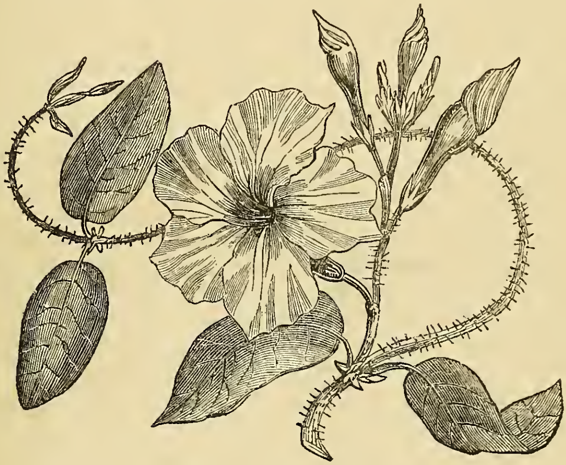
TETRATHECA HIRSUTA, OF LINDLEY.

HAIRY TETRATHECA.

THIS is a very neat little green-house bush belonging to the natural order Tremandraceæ. It is in cultivation under the name of Tremandra Hugelii, but does not belong to that genus. It forms a light and open, but branching bush, and when loaded with its starry bright pink flowers, which are abundantly produced, it is very effective, in consequence of their being projected on foot-stalks at least an inch long from among the foliage. The branches are furnished with small, alternate, hairy leaves, of an oblong ovate figure: the flowers are produced from the axils of these leaves, and are formed of five nearly oval petals, which, when expanded, exhibit a darker shade of colour around the short clustered stamens. The whole plant is hairy. It is a native of the Swan River colony.

Judging from its appearance and habit, it is not a plant at all likely to be stamped with the character of individual permanency, and therefore not so well adapted as many others from the same regions, for cultivating as specimens of extraordinary size. The present plant rather bears the characteristics of neatness and simple elegance, and is therefore likely to be most pleasing in the state of comparatively small but well-grown plants; not but that it can possibly be grown to a larger size, but is not so well adapted for that manner of growth as many others are.

The principal features to be observed in its cultivation are, to secure for it a well-drained and open compost, and to secure it against damp in the winter. The ordinary light composts of peat soil, and loam, which are used for delicate green-house plants, is suitable for this; but it requires to have it well drained, and not in pots of too large a size: in proportion as the size of the pots is increased, the necessity for drainage, not only at the bottom, but also well intermixed with the soil, becomes increased in an equal ratio. The plants should have plenty of air, in the summer season, and may also have, during the growing season, a liberal supply of water; but in no case ought they to be exposed to heavy beating rains; and in winter, it is imperatively necessary that all sources of dampness should be cut off. A slight degree of shading during intense sun-light, in summer, has been found to be beneficial.



DIPLADENIA CRASSINODA.

KNOB-JOINTED DIPLADENIA.

This plant has recently been flowered for the first time in England, at Wallington Lodge, near Carshalton, in Surrey, the seat of R. G. Loraine, Esq. It is a native of Brazil, where it was discovered by Mr. Gardner; and by that gentleman dried specimens were brought to this country under the name of Echites crassinoda. Subsequently, living plants were obtained by Mr. Low of Clapton, from Mr. Makoy of Liege, under the name of Echites Carassa, under which latter name it has become pretty generally known. Now that it has flowered, an opportunity has been presented of identifying it with the E. crassinoda of Mr. Gardner. This plant, together with the plants known as E. splendens, E. atropurpurea, and others, have been constructed into a new genus by Alphonse De Candolle, to which the name Dipladenia (from *diplos*, double, and *aden*, a gland) has been applied; this name has been given in allusion to the glandular appendages to the stem, situated at the base of each pair of leaves. The flowers are rose-coloured.

The plant, as will be seen by the figure, is a climbing shrub; it has, too, just that permanency of habit which renders it particularly desirable in cultivation. It is evergreen, growing at a moderate rate, and therefore capable of being grown into a large, permanent, specimen plant; and from the circumstance of its having bloomed in a very young state, there is presumptive evidence, that under proper management, it would be found to be liberal in the production of flowers. A stove is required, but beyond this, there can be said to be no difficulty in the way of success in its cultivation. The plant, together with all its neighbouring species, grows freely enough in a compost of loam and peat, which should, as in all cases of plant culture, be used in a rough state, and with pots well drained; these are mere routine matters, that ought never to be neglected. Judging from the circumstance that this individual has been flowered by plunging the pot in a strong (not immoderate) bottom heat, there is good reason to believe that a similar practice would be found beneficial: in fact, this is just what theory would arrive at; for, since the natural heat of the soil should average somewhat above that of the atmosphere, it becomes necessary, in order to effect this, and thus comply with the natural conditions, that the pot should be placed in some medium, other than the atmosphere, for conveying warmth to the roots. This warmth should, of course, be applied only during the active state of the organs of the plant; when at rest, which should be during the winter, no stimulant of this sort ought to be applied; but, as soon as the growth commences, a trifling degree of heat may with advantage be applied, and this ought progressively to increase to a brisk (not excessive) heat, when the plant is in the state of the fullest activity: 60° of heat at the root is sufficient at the commencement, and this may be gradually increased to 80°; but this latter ought not to be exceeded. Being a climbing plant, it of course requires to be trained in some way or other; and no plan is preferable to that of adopting cylindrical or column shaped trellises. These should be constructed of wire, and painted of some dull neutral, almost invisible colour, in preference to a decided green of any shade. The reason why permanent trellises should be adopted is at once shown in the permanent character of the plant: unlike the ephemeral productions which grow up, flower, and disappear, all within a few months, this plant would perhaps take two seasons' growth to cover a fair and sufficient sized trellis; after which, by judicious pruning and regulation of the branches, the same sized trellis would be sufficient for several years. As a permanent climber for the rafters of a stove, this plant would be scarcely excelled; and it would form an admirable companion for such plants as Allamanda cathartica, and several other of its allies.

THE ORCHARD.

There are some essential points to keep in view in forming an orchard, and unless they are attended to, there will, sooner or later, be a failure somewhere. The choice of the site for an orchard should be convenient to the store-house for fruits, if possible; but if there were a piece of land calculated to agree with the trees better than another, everything like convenience ought to give way, because, such is the permanent nature of this part of an establishment, that we had better incur the trouble of having it at the most inconvenient part of the estate, than be subject to the annoyances which shallow soil, or gravelly or sandy subsoil, or swamp, or other evils bring upon us. Let it be remembered, then, that there should be a good depth of loam; the ground should undergo a thorough drainage a good two feet below the surface, all over, and the water should be carried off by means of ditches or other prepared watercourses. Trench the ground all over a good two feet, and it is of no consequence if a little hungry soil gets thrown to the top. We next come to the choice of trees, and here there are several considerations to be well weighed. It must be obvious that a good tree takes no more room than a bad one, and that, while there is a choice, the best should be taken. Suppose, then, we select for the orchard all the usual fruits, we should take not more than a dozen or fifteen kinds of apple; the same of pears; six or eight sorts of plums and cherries. We should be equally choice of other fruits; and, where there are catalogues with hundreds of varieties to choose from, it is no easy matter to select. Many authors have given us selections, but they are too extensive, and in many of the instances there has been too little regard to flavour and too much for show. In the Garden Almanack there have been such selections made, as good for practical purposes, perhaps, as there can be found; many may desire to have more extensive collections, they are at liberty to do so; but the selections there given amount to fifty or sixty varieties of different fruits, and that number would occupy a pretty good orchard. Let us begin with apples: the Golden Pippin, or Franklin's Golden Pippin; Fearn's Pippin; Kerry Pippin; Emperor Alexander; Blenheim Orange; Ribstone Pippin; Nonpareil; Hawthornden; Royal Russett; Scarlet Nonpareil; Golden Harvey; Norfolk Beaufin; June Eating; French Crab; and Court of Wick. Now here is a mixture of kitchen and dessert apples, the very best in cultivation, not one of which is even of a secondary quality, coming in at all seasons, and lasting from one year's end to the other. Let us next take pears: Louis Bon; Beurre Rouge; Brown Beurre; Jargonel; Green Chizzle; Bergamot, (summer;) Gansels Bergamot; Pas Calmar; Williams' Bon Chrétien: Maria Louise; Charmontel; Von Mons. Leon Le Clerc; Lansac; Golden Beurre; Swan's Egg; Crassanne. To these may be added the Old Windsor, following, as it does, close upon the Jargonel before any other is ready. It is almost impossible to add advantageously to these, or to spare any, if a regular supply be an object. Let them be had in young plants, not too tall;

let all the roots be taken up carefully, and before planting cut off every shoot in each root that grows downwards. Depend mostly on the surface roots, and if any straggle too far, cut them shorter. Take off also all bruised or ragged ends with a short knife, and they will be ready for planting. In proportion, however, to what the root has lost by pruning, so reduce the head, and especially let those branches which shoot directly upwards be shortened; for, of all inconvenient growths, the long growth upwards is the worst for gathering and everything else. Let these trees be planted within twenty feet of each other, in three rows, and the rows be forty feet apart. Let the rows run east and west, so that one side of the trees will have all the sun from rising till setting; and, as the trees will in time pretty nearly join in the rows, the distance of forty feet from row to row will always give room for the sun to shine even down to the roots on the south side of the rows; but, in the early years of an orchard, the trees ought to be encouraged to spread rather than tower aloft. The fruit will be better, and ripen better, for being near the ground; and the branches should be kept thinned, that there may be plenty of air. For ten feet on each side the rows of trees the ground ought to be laid down to grass. This will leave twenty feet for cultivation of any kind between the rows, and the finest crops will be grown there, because the trees will afford great shelter from high winds, while there will be abundance of sun and air. The grass should always be cut before seeding, either for green meat for cattle, or to be made into hay, two or three times a year, as it will be found to grow freely in all weathers in such a sheltered situation. As to the crops between the rows, they may be the usual kitchen-garden crops, or potatoes, turnips, carrots, mangold wertzel, &c., for cattle, or a regular routine of vegetables, and even corn, in its turn; or it would be an excellent situation to grow things for seed. To the trees all this would be immaterial, and they would rather benefit than damage the crops, be they what they may. There is one advantage in planting trees in rows from east to west (some, by the way, prefer south-east to north-west, because, as they say, the east winds do not rake them so badly; but we prefer due east to due west), and it is this—it makes two seasons of fruit to the trees, those on the south side invariably ripening sooner than those on the north; and although it may be said that, place a tree where you will, there will be the same two seasons; and so there may be, and is, no doubt; but in this case there is no consideration wanted: one front of the row is one season, and the other front is another season, without our having the trouble to examine where the points of the compass are. The mode of planting these trees is to make shallow holes, well loosened at the bottom, and quite as large as the roots spread. Keep the collar of the plant—that is, the place where the tap roots spring from—quite up to the surface, and put the mould well between all the roots, treading firmly, but not driving the roots too low down. Let them be staked into their places, that the wind may not disturb them, for that is highly injurious, because it not only unsettles the young trees, but it breaks the fine roots, which, being trodden in well, are held fast while the tree is bent away from them, and the tender ones must give way. It may be urged that this is a most extravagant distance to plant an orchard, and so it is, if ground be scarce; but remember, not a foot is wasted. It is all grass land, or arable land: it is all paddock or garden. It is the way to grow fruit in good order, to keep trees in good health, and to last many years. If you want to grow more for present convenience, and cannot spare the room, why go another way to work: plant your apples and pears twenty feet apart every way; then, instead of getting fifty trees into an acre, you get a hundred; but if there be any subject in the growth of which people are covetous, and grow to waste, it is fruit. What family consumes the produce of a hundred well-attended orchard trees? and yet, what orchard with a hundred trees, (grown as trees are grown now in private orchards) ever supplied a family with enough? It is the bane of fruit-growing in old orchards, that what with the blight, the canker, and the fruit which falls, very little sound fruit, fit for storing, is gathered, though there are trees enough to supply a whole village, if they were good ones. Give us two acres of nice loamy ground, in which we might plant, our fashion, about three trees of some of the sorts we have mentioned, and one or two of others, together with plums, cherries, a walnut or two, a mulberry, one or two medlars, &c. (all of which we shall come to in time), and keep the portions between the rows for a kitchen garden, and we should think our two acres well laid out; although we should prefer a snug kitchen garden, with walls, and a house or two, and pits for the growth of choice vegetables; and keep the orchard for spare crops, or heavy ones, not requiring so much attention. Of the plums that we should plant in an orchard where the trees have room, as we propose, and are to be kept in good order by pruning, there are the Greengage, Orleans, Coe's Golden Drop, Purple Morocco, Washington, Imperatrice, Magnum Bonum, Wine Sour, Goliah, and Cant's Late Greengage; every one of which is useful, and will grow on well-pruned standards, and all of which are exceedingly rich and good, as well as (with the exception of the Wine Sour) handsome. These we should give just the same distance, unless, as we before stated, we were cramped for room, (because, if we were, we might plant them ten feet apart instead of twenty, they would grow for years before they were crowded, and particularly as, in such case, we should adopt a different mode of management,) for we should with these, as pears and apples, encourage their spreading, rather than growing lofty. Again, with regard to cherries, the May Duke, the Kentish, Biggereau, Late Duke, Black Eagle, Florence, Morrello, and Circassian, all useful or fine eating fruit, we should plant them in the same way; and here would be all the fruit a family could want from an orchard, with the two or three exceptions mentioned before. If the orchard were walled on the north side, so as to enable us to grow the more delicate fruits, or even some of these we have mentioned, as wall-trees, we might choose from the same authority our selection of peaches, nectarines, and grapes. Some of these are evidently chosen for their season, otherwise, for flavour, there are two or three that beat all others. No six peaches will beat the Early Avant, Early Newington, Red Magdalen, Royal George, Noblesse, and Old Newington. And the following are the best nectarines: Elruge, Red Magdalen, Fanchild's Early, Temple's, Late Newington, and Red Roman. These might be planted in a border not less than ten feet, and better if fifteen feet wide, made up of rotten turfs and good loam trenched eighteen inches or two feet deep, and laid sloping to throw off the wet. They ought not to be nearer than ten feet to each other, be planted well up on the surface, tap roots cut off, and superfluous branches cut right away. We should prefer maiden trees ourselves to trained ones, and cut them right back, each branch to the two or three lower eyes. The growth they made the first year would be so under control, that we should prefer exercising our ingenuity and patience, to distressing a well-trained tree by removal, and by allowing it to bear fruit; and if not to bear fruit, a maiden tree, cut back, would be better, with our care, and beat a trained one in two years. However, it is not often we can find orchards walled to our hands; and if not, it is neither wise to build, nor desirable to have any of these fruits far from the house, or the most secure part of the kitchen garden or grounds. All the plums we have mentioned would be finer on a wall, perhaps, than on standards, and so would the cherries; but as peaches and nectarines will hardly do on standards, and must, to be done well, have a wall, we have only treated them as wall trees, else, for use as preserves, or tarts, in families, the nectarine and the apricot will be found to do moderately well on well-pruned and well-managed standard trees.

The great object in forming orchards should be to give room, and light, and air to the trees, and in most cases there might have been all this provided for, and perhaps was; for on looking at old orchards, it will often be found that trees of much younger age than the principal ones have been planted between, simply because there appeared to be room, and that seems to have been the only object in view with some people; so that there were room to put in a tree, that is, room for it to stand, they seemed not to think about whether the sun should ever reach the roots, or even the tree itself; and to this injudicious mode of crowding, and the neglect of pruning, may be attributed most of the canker and decay that may be found in old establishments. Those, however, who take an interest in renewing old orchards, should set about it in good earnest by first trenching every foot of ground that they can turn up, that is to say, between the trees; and they must trench as close up to them as the roots will allow; nor need they be very particular about cutting off a few roots. It is more than probable that by sacrificing one or two trees that come in their way occasionally, they may clear the way for a row of young trees at proper distances apart; for the ground of old orchards is generally pretty good when turned up a couple of feet deep. Plant them as we have now directed for new orchards, and when a row is complete, measure about the intended distance for another row; and if there be no means of clearing for it, go wider or nearer to find a clear row, and plant another, looking to the ultimate removal of the old trees altogether. In this way an old orchard may be replanted with young healthy trees, though there be no room for them to grow above a year or two, and then set about vigorously cutting in the heads of the old trees, even to the removal of three parts of the branches, and especially all that obtrude themselves too much towards the new ones; the object of pruning and cutting away the old trees so much, is to keep them out of the way of the new, without sacrificing them altogether; for, as the roots will have suffered by the trenching, they require a good deal to be cut away, that the rest may bear some fruit while the young trees are coming up. In this way we do not lose the fruit of the old orchard altogether until the new trees begin to bear; and it will soon be seen that particular trees may be dispensed with altogether; indeed, about the third season, the new trees will have made such progress, that the ground, except, perhaps, one or two lingering favourites, may be cleared altogether. Then the remainder of the ground must be trenched, and all the roots regularly grubbed up; nor must this part of the business be neglected, for the ground must be freed entirely from all these roots and bits of roots.

DESCRIPTIVE FLOWER LISTS.

THE DAHLIA.

Few plants came more rapidly into notice, when once fairly introduced, than the Dahlia, and, like all subjects which attain great popularity, it was the cause of great emulation, and soon afterwards of great excess. The introduction of double varieties from Holland and France created an enthusiasm rarely equalled. To be first in the attainment of a new variety was a sort of triumph aimed at by many; and so great was the thirst for extensive collections, that, like the roses, the smallest conceivable difference was enough to call for a new-named sort to add to the catalogues. The raisers and dealers travelled far and near after novelty. A degenerate race of flowers sprung up, and the sole object appeared to be to make an extensive catalogue. It was not uncommon, in these comparatively early days, to find a batch of seedlings, of which not one was double; and here and there were found, especially in Ireland, France, and Holland, flowers of the anemone form, others with a larger than average number of petals, and they much narrower than usual; the former were called Anemone Flora, the latter China-aster Flora; and various were the changes rung upon names even in these two monstrous families. Then there were globe-shaped flowers, which were sought after with great avidity; and nobody in the trade thought of putting a less sum than half-a-guinea as the price of a novelty. There were at that time a great number of persons whose ambition it was to boast of the largest collection—a kind of customer very useful to the trade. All at once showing for prizes became a fashion: it commenced in London by some one giving a silver cup for the best twelve blooms that should be exhibited at Billingsgate, a locality easily accounted for by the fact of Mr. Goldham, the clerk of that market, being an old and influential florist,—and having established a society, called the Friendly Society of Florists, at that place, which Society comprised about twenty of the most successful amateur and professed cultivators; and as soon as the meeting was announced, the rooms of that Society were suggested as a fitting place for the proposed show of Dahlias. There is no doubt that show alone made many persons commence growing the flower; and after the dinner, which was usual on such occasions, a rough outline of rules and regulations for a new Society were drawn up; and then, shortly after, there was a show at Hammersmith, at which the prizes were silver medals, on which the inscription was, "*The Metropolitan Society of Florists and Amateurs, established* 1832." The gardens may be said to have at that time been overrun with Dahlias of every form and fashion. If there be anything in the doctrine of morphology, that flowers are malformed leaves, there could not be a more whimsical family of leaves in cultivation; for the noble flower of the Dahlia, which, in the best varieties, had not half reached perfection, had been frittered down to a weed, and a very untidy weed too. At this period but little had been said of what constituted a good Dahlia; catalogues were preparing with the usual, or a much larger than usual, assortment of Anemone Floras, China-aster Floras, and globe-flowered kinds; but the Metropolitan Society did the first serious mischief to them, by deciding that those kinds were not to be shown for prizes, and publishing the description of the properties which constituted perfection. Here was an end to the monster family; most growers discarded them altogether; few, if any, bought any more; and the dealers, who depended on the usual call for novelties, were sadly disappointed. The consequence was, that all who raised seedlings had some guide for their selection; a general improvement was soon perceived, and has been progressing ever since; one of the necessary consequences of showing the florist what he is to strive for; not that he has an opportunity every season of bettering his collection, but that he has the means of knowing how to avoid adding new flowers that are worse. The trade, even at this period, encouraged by the rage for new varieties, still greedily purchased any novelty of which any taking description could be given. So anxious were they to grasp at everything, that anxious novelty-hunters were trying to supersede each other in the purchase of a flower without the slightest knowledge of the parties who had raised it; and nine times out of ten they retailed all the alleged good qualities of their newly-acquired treasure, got it talked of pretty generally, made the Dahlia fanciers mad after it, and sold in large quantities new kinds, which turned out good for nothing. The increase of the exhibitions did much towards correcting a bad taste, and preventing a good deal of this blind work of both dealers and amateurs; but it damped the ardour of many when they found, annually, that the greater portion of the new flowers were totally useless; and those who had done most business incurred the greatest displeasure, and eventually found it necessary to discontinue it altogether. The most effectual check put upon this wholesale deception was by the plan of proving flowers one season after they were raised, and exhibiting them during the season of bloom. This enabled persons to buy flowers of their own choosing to assist their collections, and but few were content with the descriptions, while they had seen enough for these purposes with their own eyes. The prizes awarded to seedlings by the Metropolitan Society of Florists are, generally speaking, a tolerable guide; but even there it was difficult to find a judge who would, on looking at a flower, keep in his mind all it ought to be. A novelty in colour was sure to charm even an old fancier; a brilliant tip, or well-contrasted shade, or a delicate margin, would close his eyes against long or notched petals, confused eyes, and starry outlines. There was no resisting novelty. Even up to a late day a new colour would secure the safe passing of a very middling form; for we have instances before us, even within the past two or three years, of coarse, long, reflexed petals, opening like so many funnels, and doubling under, to form almost a globe, passing what may be called an ordeal, as a first-class flower, whereas, had it been any other colour, it had been called coarse and bad. There is, however, something to be said in favour of even this case; for it may well be argued, that we cannot attain all points perfect at once, therefore a decidedly new colour must be seized when it can be had, and retain its place until something of the same colour comes of a better form. In the present day, as heretofore, size has a great charm for many persons; and even judges will not lose sight of what is called fine growth, while they give the necessary attention to the outline and the centre. Compactness is so essential to the character of all flowers, that size, unless diminutive indeed, should be a secondary quality in all men's eyes. The style of flower, which, after some years of writing, and showing, and judging the Dahlia, seems now to prevail, is greatly improved upon the old, large, and but ill-shaped varieties. We have no Wilmot's Superbs and Nymphea Floras, eight or nine inches across; but we have neat, round, close, symmetrical Queens of Roses, Nonpareils, and Standards of Perfection; and each year of late has added something worth keeping. The present year, perhaps, is prolific of second class flowers, useful, but faulty; several of the new ones beat old ones of the same character. Thus, the Marchioness of Ormond has completely beaten Bridesmaid when at her very best; yet Bridesmaid beat the Maid of Bath, and was a very interesting variety, indeed it was at times exceedingly beautiful; and this said Marchioness of Ormond is, according to a very good authority, the best new flower of the season, and will probably be the flower of the season. All the rest of this year's flowers have some offensive fault; some, and even some of the best of them, have confused eyes, or points or notches at the ends of the petals, or are loose, and want compactness. The yellow, called Cleopatra, would be called a coarse flower if it were a purple instead of yellow; but all people seem very anxious to add yellows and whites. Defiance and Argo both grow well and show well at present, and they frequently beat Dodd's Prince of Wales, which, from its exceeding doubleness and sunk eye, is rarely good enough to show, though people obstinately put it in a stand in that bad state, as if they wished to condemn the flower instead of showing their best conditioned blooms. The uncertainty of the Dahlia has long been the subject of great speculation; but it is its uncertainty which makes people fly with more avidity to new varieties, and praise moderate or even inferior flowers that come constant. Some grow a great number of a sort, and very few sorts; others grow many varieties, and not more than two of a sort; and the latter will often be able to show when the former cannot, because all Dahlias have their seasons; and he who grows the greatest variety of flowers (so that they be show-flowers) will always have a better chance of showing a given number of blooms than he who grows fewer sorts and the same number of plants. Some Dahlias grow best early in the season, others best late. One instance occurred the last season, among the new flowers. Sir John Stewart Richardson was beautiful all August, but went off a good deal as September advanced; and at the last show, as we observe by a summary in the Garden Almanack, it was in but few stands; while Lady Antrobus and Standard of Perfection were in every one, or nearly every one, in the room. In some cases a Dahlia is constant enough in ordinary condition, but can seldom be caught in first-rate condition; such flowers are more frequently condemned by first-rate florists than by common people, because in their ordinary condition they are offensive, and hardly expected to be otherwise. We once saw a bloom of Nicholas Nickleby, the most confused and ill-conditioned, ill-coloured variety in existence, in such fine order, that, had we been a judge, we should have thought it could hardly be surpassed in form; but it was the only time we saw it so; and we might have been deceived into giving it a good character for the one season, had we not seen other blooms to create a doubt. The uncertainty of the flower is, nevertheless, one of the great charms of the fancy; it is impossible that anything which is always alike can excite strong interest. Culture has much to do with the condition of a flower; but all the culture in the world cannot make it certain, and hence the charm of cultivating. It is our object here to describe some of the principal Dahlias already in cultivation, and to give a list of the new ones, with such notices as the occasional appearance of some of them enables us to annex. In estimating those already in cultivation there will be little difficulty in giving an opinion. They will, from our description, be easily recognised by those who know them, and their value estimated by those who do not know them; for the properties are pretty well understood by most persons, though they may not all thrust themselves forward as judges. It is to be recollected that the leading faults in the Dahlia of the present day's taste is extreme doubleness, which prevents the petals from developing themselves in perfection. They fold round and form tubes, open at one end, or quills, which scarcely open at all; in both these cases there is a want of form. The face of the flower is confused with the backs of the petals, which are of a dull colour; there is no imbrication; there is a vacancy between them, caused by their folding up into a narrower space than they would have occupied had they fairly and freely opened, and the outline of the flower, as well as the face, is confused. These flowers are uncertain, because, although they are showable, and are frequently shown in that state, they detract much from the stand in which they are placed. There is nothing more offensive in a Dahlia than the showing of the backs of the petals, which are always worse and more dull-coloured than the fronts, and entirely destroy the beauty and symmetry of the flower. But these very Dahlias, which are so offensive generally, and throw their petals in tubes or quills, are so beautiful when they happen to open freely, which in some seasons they will, that then nothing surpasses them. There is another singular fault in Dahlias, and it arises from the nature of the properties laid down; the eye, or centre, should be up to the surface. Now, the petals, to form a good centre, have to lean inwards, and join the tips together in the middle; every row of petals has to rise and open, if they do not absolutely turn back. Unless, therefore, the petals are short, their rising and opening leaves the unbloomed ones sunk down, and thus creates one of the fatal blemishes; but such flowers come now and then, and give us a full and compact eye at the same time. Dahlias, however, require unchecked growth. They should not be exposed to north and east winds; they should never be watered without having it all over their foliage; and nothing so contributes to keep them from thrip and insects in general as syringing them with a garden-engine, with a fine rose to disperse the water in small particles, but with some force. To grow them through hot weather, without often wetting their leaves, is distressing, and the ground should be soaked all over instead of at the roots. By these means, used in time, they flourish almost as much as with so much rain, and the flowers will grow full and double. The collection that we should recommend would comprise about sixty or seventy kinds of the present sorts, and such only of the new ones as come out in May. We take them as their names casually come across us, and not with any particular arrangement.

Queen (Widnall).—A very double lilac rose. So double, that it is apt to quill and show the backs of the petals; but when in perfection a splendid flower, very symmetrical at all times, and exceedingly showy in a stand.

Sir Frederick Johnston (Hillier).—A useful flower of dark puce colour; compact, and generally very full and double; rather sunk in the eye occasionally, but useful.

Mrs. Shelley.—A very useful and delicate rose-coloured flower, full average size, and well up in the face; it has not a bad outline, and may be reckoned among the constant show flowers that grace a stand.

Vivid.—Probably as good a scarlet Dahlia as we have at all; always respectable in a stand, and frequently taking first prizes in the scarlet class; it has all the good points in a moderate, though none in a first-rate, degree.

Indispensable. — A very handsome dark rose, every way fit for a stand, well up in the centre, and tolerable good outline.

Argo (Widnall).—Bright yellow petals, very much cupped, and therefore rather open, each petal forming in rather a funnel shape; for colour it is very good; size average.

Defiance (Cox).—Paler yellow; rather compact and good centre; outline middling; petals rather inclined to reflex than otherwise, but occasionally very good.

Admiral Stopford (Trenfield).—Fine black, well-formed variety, of average size; very double; excellent outline, and the finest in its class.

Essex Triumph (Turvills).—Black bold flower, must be grown the full size to be average; centre well up, petals rather coarse, and inclined to reflex as they open.

*Leander (Bevan).—Large, bold, bright crimson rose; rather open, but fine outline; full size, eye rather flat, but a fine flower altogether; the only large flower of its colour.

Queen of Roses (Widnall).—Beautifully compact well-formed flower, rather below the average; delicate pinky-rose colour; fine outline, and every way desirable, if not the first in its class, which we expect to see it when in general cultivation; it is equal to any we have seen.

Antagonist (Bragg).—The best white we have at present; large full flower, and when at its best, fit for any stand, though there is room for improvement; the outline is not perfect, and the flower is generally flat as compared with a perfect model.

Spary's Admirable.—Dark rose, compact bloom; outline not perfect, but a useful flower, and often very good indeed.

Bridesmaid (Brown).—A white flower, with a delicate purple tip or shade; uncertain, but occasionally compact and fine; average size, and, when well grown, fit for a choice stand.

**Marchioness of Ormond* (Girling).—A complete superior, in all respects, to Bridesmaid. White, with purple tip; good eye or centre; fine outline; average size, and, to all appearance, certain. The best of the new flowers for 1845, without exception.

Burnham Hero (Coker).—A useful maroon; average size; not a perfect outline generally, but should be grown in collections as a safe flower to fall back upon at all times.

Bedford Surprise (Shepherd).—An uncertain but very handsome shaded flower of puce and crimson; average size, and very effective in a stand.

Dowager Lady Cooper (Jackson).—Uncertain, but fine rose, and a great addition to any stand when well bloomed; outline not perfect, but occasionally a very good flower.

Prince of Wales (Dodd).—A very double pale yellow, of uncertain growth, because there are almost too many petals, and they cup so much, that, like most cupped flowers, the eye is generally sunk; nevertheless, it has a fine outline, and when in perfection, nothing we have in the same colour touches it.

Princess of Wales (Hudson).—A fine rich-looking lemon-coloured flower, with purple shaded tips; very compact, with fine wax-looking surface, and, when in perfection, a splendid addition to even a small stand.

Conqueror of the World (Stein).—In colour a little similar, but with thinner and narrower petals; more decided tip, but a looser flower; when well grown, a pretty variety in a stand, but not to compare with the Princess.

Beauty of the Plain (Spary).—White tipped, or rather edged, with purple; full average size; uncertain in the eye, and wants rapid growth, but a fine flower in a stand when perfect.

Duchess of Richmond.—A beautiful rose colour, with a sort of golden shade on the tips; petals narrow, form splendid, and well up in the centre.

Sir J. Stewart Richardson (Sharps).—Very much the colour of the Duchess of Richmond, but without the shade on the tip; eye not so well up in general, but to be shown beautifully in part of the season, and quite an acquisition to a stand; the petals are broader than those of the Duchess, and the flower shows well all the early part of the blooming season.

Holmes' Exquisite.—A very beautifully formed variety; size less than the average; petals reflex; also white, mottled with purple; when in perfection, possesses all requisite points for a good Dahlia, though uncertain.

Grand Baudoin (Low).—A useful dark purple flower, grows, however, too tall for convenience.

Coronation (Low).—Light purple; very neat flower, and, when well grown, a handsome variety in a stand.

Eclipse (Widnall).—A scarlet Dahlia; the petals inclined to quill; very double and symmetrical, and a fine showy variety when perfect; full average size.

Eclipse (Catlough).—Fine scarlet, inclined to quill, but good flower when perfect.

Highgate Rival (Stein).—Useful crimson scarlet flower, average size, but considered rather coarse, though handy.

Lord Dudley Stuart (Jackson).—Uncertain, but useful crimson flower, and handsome in a stand when well grown.

Northern Beauty.—White, full, double, and symmetrical flower, with crimson edges to the petals; one of the most showy varieties we have; the outline is not perfect, but it does no discredit to a good stand, and is rather a brilliant addition when well done.

Metella (Begbie).—A most uncertain, but beautiful, flower; it is too often deficient in the centre; but, when well grown, no purple comes near it, either for individual petal or general form.

President of the West.—An excellent crimson flower of the full size, and highly useful in a good stand; one of the best of the crimsons, until its own seedling, the Standard of Perfection, beat it.

Phenomenon (Whale).—White, edged with purple; a very excellent show flower when grown well; it stands as well as any white-edged variety, and looks noble in a good stand; apt to show the green scales at the bottom of the petals in the centre.

Pickwick.—A very pretty purple variety; petals narrower than we like, but the colour is bright, and it is still a favourite, though beaten.

Penelope (Headley).—A creamy white, which displaced Eva, previously a show flower, and is occasionally very pretty, though not a favourite colour.

Rouge et Noir (Ansell).—A dark variety, with occasionally a crimson shade, which makes it a brilliant flower; it is often notched at the edge, and at best not a good outline.

Scarlet Defiance (Cozens). — Rather a blood-red than a scarlet; close flower, but eye sunk a little, and outline not perfect.

Climax (Jeffreys).—Useful purple, occasionally very fine and showable, but beaten by more modern flowers.

Hope, or *Metropolitan Rose* (Neville).—Rather darkish rose; uncertain, but an excellent flower: full average size, and not easily beaten when grown well.

Unique (Ansell).—Yellow, with a brown shade or tip, but occasionally quite yellow; a well-formed flower at all times, though the petals are rather coarse, and reflex a good deal. It preserves still by its form a place which its colour does not deserve, and would now be among the best twelve if well grown.

Maria (Wheeler).—A pretty rose-coloured flower, handsome in a stand; very neat and compact, with a tolerable good outline; size below the average.

Springfield Rival.—The very first well-formed Dahlia that was produced; fine outline, remarkably symmetrical, and useful in any stand. Indeed, though there are flowers in the same way still more compact, it will not easily be displaced.

Bloomsbury (Lee).—A large scarlet, very bright, almost too large for a stand, unless grown in a pot or confined situation; when grown in the open air, the lateral blooms only come near a showing size, but it has not a good outline at the best, and but for its colour would not be tolerated in good stands.

**Beeswing.*—Crimson; a splendid flower in some respects, but, as we have seen it, there is a point to every petal; still, it is round, full, double, and symmetrical, and will be grown by everybody.

**Empress of the Whites.*—A very pretty flower, but the petals have the same little point discernible, even when well done; nevertheless, it will be a favourite, though it quills too much.

Nonpareil. — A fine crimson scarlet, of beautiful form, good texture, perfect petal, double and compact; a most desirable variety, worth more now than half the new ones.

Bermondsey Bee. — A darker flower, of equal, if not superior, pretensions, and very desirable; compact, double, and symmetrical.

Lady Antrobus.—One of the best of the light-edged flowers, and one of the most successful of the last season; its petals are soft, but it does not spoil the flowers for a good stand. It requires good growing, but not too much of it.

Standard of Perfection.—A flower considered a model in all but one respect; it is double, and cups so much, that the eye does not come up perfect to the surface; it is pretty nearly as double as a ranunculus, and is almost without a rival; colour, deep crimson.

**Duke of York* (Langley).—A yellow, rather compact and good, inclined to go off brown outside, but petals of good texture.

**La Polka* (Francis).—A very pretty yellow, rather compact, and well up in the centre, with a good outline.

**Mary Anne* (Harrison).—Rather a successful tipped flower; said to have won every prize it was shown for in the country, but not shown in London.

**Ithuriel.*—A strange bronzy mixture of colour, hardly describable; moderately well formed, and rather conspicuous.

**Duke of York* (Harrison). — A yellow flower; pretty fair average for quality, but not extraordinary.

**Essex Primrose* (Wicks).—A large primrose-coloured flower, with good outline; rather too open and coarse as shown in London, probably from excess of growth; inclined to be flat in the centre, but a very large showy flower.

**Arethusa.*—A singular and pretty purple, average size; the centre not so well made up as we like, but novel colour, and rather striking.

Essex Champion (Turville).—A crowded flower, rich orange colour, uncertain, but a very striking flower when perfect; above the average size.

Twickenham Rival (Kingham). — Bright yellow, fine petals, excellent texture, full double flower, uncertain in the centre; but, when caught perfect, the best yellow, especially in the colour and general form.

Sir Robert Sale (Smith).—A flower of excellent proportions, but occasionally notched; dark puce; very compact, and occasionally equal to any Dahlia in cultivation, the centre being generally excellent.

**Lady Sale* (Smith).—A well-formed flower, double, symmetrical, and novel; yellow ground, crimson tops, very decided and shaded down into the petal a little; occasionally a very beautiful variety in even a choice stand.

**Essex Bride* (Turville). —A silvery lilac flower, remarkably bright, of pretty form, and in general a good show flower, taking first class prizes in the lilac class, and making a very good addition to a small stand.

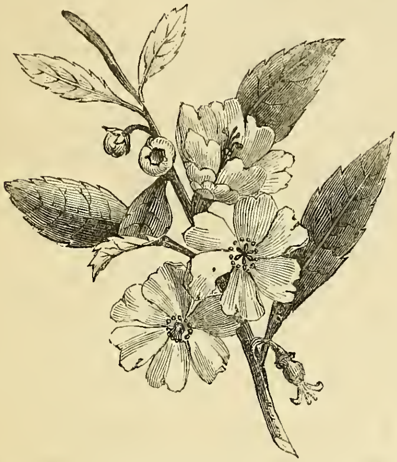
**Caledonian* (Sharpe).—A similar coloured flower, of very much larger size, and calculated to make a fine back-row show flower; petals rather long, but well covered.

**Essex Scarlet.*—A close flower, rather below the average size; very bright; moderately good outline, but centre rather confused, and flower apparently rather uncertain.

**Gloria Mundi* (Gebherd). — A showy, large, well-formed orange buff, with red backs to the petals, showing in front like a variegated Dahlia ; very double and very symmetrical.

**Beauty of Chelmsford.*—A white or mottled flower, with purple rosy tip ; petals reflex ; flower not a bad form, but rather rough. It is, nevertheless, a showy variety.

(*Those with stars are new flowers for* 1845.)



LAPLACEA SEMISERRATA, OF ST. HILAIRE.

HALF-SERRATED LEAVED LAPLACEA.

A stove shrub under cultivation, but forming in Brazil, where it is a native, a small tree of twenty or thirty feet in height. Mr. Gardner found and gathered it at Goyaz. Without being remarkably handsome, it is a plant of considerable interest and beauty, and has several qualities which are highly commendatory. One of the best of these qualifications is, that of blooming freely when of small size. A plant growing in the collection at Kew, though not above a foot in height, has hitherto bloomed freely during the early part of the winter—a season when free blooming plants are held doubly valuable. Its dwarf, bushy habit, and permanent, ample foliage, are also good parts; the latter, as well as the general appearance of the plant, has considerable resemblance to a Camellia, or still more to a Tea plant, with both of which it is very closely allied in its natural affinities. The leaves are oblong or obovate, with the margins serrated in the upper leaf, nearest the apex. The flowers are produced from the axils of the leaves on very short stalks, either singly, or two or three together: they are composed of a varying number (five to eight) of obcordate white fleshy petals, and look something like those of a small single white Camellia. It belongs to the natural order Ternstrœmiaceæ; and is synonymous with the Hæmocharis semiserrata of Martius, and the Wickstræmia fruticosa of Schrader.

With respect to cultivation, doubtless much the same treatment as permanent shrubby stove plants of this class generally receive, is suitable to this also. A compost of three parts of loam, and one part of peat earth, leaf mould, and sand, is perhaps the best of all mixtures for them, and capable of securing all that soil can effect: good treatment must therefore supply the rest; and this would consist in apportioning them distinct periods of alternate rest and excitement. The *rest* should take place during the latter part of the summer, after the growth is matured; and the *excitement* should take place early in the spring, after the blooming season was past. A progressive increase of heat, with moisture, maintained until the annual growth was ripened, should mark the latter, whilst the former ought to be characterised by as small a portion of both as would be consistent with the safety of the plants; this would be something warmer than a common green-house.

THE CULTURE OF THE MELON.

Probably there has been more written about the culture of the Melon than upon any other single subject, and yet we find hardly two persons recommending the same plan, or following the same practice. Nor is there much difficulty in producing fruit in great plenty, of good flavour, and handsome appearance. Formerly the Melon used to be an article of great consumption. It was not uncommon to see a market gardener with his three or four hundred lights of Melons, producing week after week large quantities, and getting rid of them at good prices. Now it is rare to see any quantity grown, and the foreign Melons, though unfit to eat, seem to usurp at the market the places of their betters, at a price that would scarcely pay an English grower for cutting them and bringing them into London, even if they cost nothing to grow. The market gardeners' mode of growing the Melon is simple enough. The hotbed is made in the ordinary way; the plants are put out on a little hillock under the centre of each light, common loam is added until it is ten or twelve inches thick all over the beds, a little air and occasional water until the plants are fairly set off growing, and there ends their culture. As soon as there is fruit likely to swell, they put a bit of tile under to prevent the earth from discolouring it, which it always will on the under side if it lie on the bare earth. We have ourselves seen three hundred lights of Melons treated in this rough way, and producing, upon an average, three fruit to each plant, coming in good season with very little trouble or attention, but merely giving air in the heat of the day, and closing and covering up with mats at night. There would be no immediate occasion to go to work so simply as this with a choice variety of Melon; but it would be quite as unadvisable to set about it with any vast preparation; and as to the soil in which it is to grow, nothing that has yet been recommended beats a rich strong loam, fully charged with decayed vegetable matter. The turfs cut to lay down for lawns, if laid together and rotted, form the very best compost that can be used, taking growth and flavour into consideration. It is, however, requisite that such compost should be freed from grub, wire-worm, and all other vermin, which turfs are too frequently full of about the time the sward has rotted, as in almost all cases wire-worms and grubs are in among the roots themselves, and are removed with the turfs. Decayed turfs are in almost all cases sandy enough, strong enough, and rich enough, and require very rarely anything else. If, however, contrary to ordinary cases, the stuff may appear too adhesive, the best addition that can be made is road scrapings; but we have rarely seen rotted turfs that were not every way adapted for the earthing of a Melon bed. We are not going here to speak of new modes of heating, confident that nothing we have seen at shows or tasted at feasts have beaten the productions of an ordinary dung bed. We shall speak of those only, in the first instance. Whatever substitutes may be found in hot-water pipes, tanks for bottom heat, open gutters for moisture, and what not, may be treated of in their several places. In the meantime, we set out with the most choice variety of Melon, and nothing but well-prepared dung and a three-light box, with the loam formed of rotted turfs for our compost. It may, however, be well to observe, that these rotted turfs may be considered half good loam and half vegetable mould; for the turf, as it is growing, forms more than half the bulk, and is, by the time it is wanted, pure vegetable mould.

PREPARATION OF THE BED.

By turning over hot stable dung repeatedly during a fortnight or three weeks, so as to shake it well out and mix it altogether, putting this day the outside in and the inside outwards, sprinkling it with water where it is heating too much, and well turning it about, the dung will become moderately warm all through, and in a fit state to form a proper hot-bed. Pile this dung up neatly, and in even layers, into a square-sided heap about a foot larger every way than the frame which is to go on, and about three feet six inches high; put on the frame, and the glass on it, and thrust a long stick with a point to it into the dung, about half way down, far enough to reach the centre of the heap, and leave it there; because, by withdrawing this at any time and putting your hand to it, you can feel whether it is too hot or too cold, or about right; the stick, being returned to the place, will continue to be a test of the internal heat. Put three inches of loam all over the inside of the frame.

SOWING THE SEED AND AFTER MANAGEMENT.

Sow the seed the first week in February, in a large sixty-sized pot of the soil we have mentioned. Put three seeds in a pot, and get them into cucumber frames already going on, or into the bed already described; only it is a pity some other beds are not provided for getting up the seedlings, because the bed prepared as directed should be ready just at the time the plants are ready to go out. As soon as the seedlings have two good rough leaves, change them into forty-eight-sized pots, the three plants as they are, without disturbing the balls of earth. Let them have water to refresh them, and occasional air by raising the back of the lights. You may now pinch the tops off, just close down to the second pair of rough leaves. If you have been obliged to use the first-made bed for raising the seed, you must prepare one for the fruiting; but if you have been able to raise your seedlings in other frames, and you have so timed the preparation of a three-light box, after the manner we have directed, as to be just ready for the reception of the plants, a barrowful of the compost may be placed in a heap under each light, which, in our three-light box, will make three heaps. Into each of these heaps we propose to turn out one of the pots of plants. The cone thus formed in the middle of the light may remain a few hours, which will warm the mould through; the centre is then formed into a hole, so as to take the ball of earth entire, with the three plants in it.

RIDGING THE PLANTS OUT.

The pots of plants selected for the fruiting bed should be those which have the shortest joints—that is, whose leaves, which come out at joints only, are nearest to one another; and any that have lateral branches shooting out are to be preferred to those which have not. Turn the pot wrong side upwards, and knock the edge of it against the frame, when the ball will leave entire. This ball is to be placed in the centre of a heap, so that the bottom of the ball may be resting on the original level loam three inches from the dung; the heap of mould may form a ridge round the ball of earth, heaped close up against it all round, and making a kind of basin, into which some water of the same temperature as the inside of the frame should be put to settle the earth about the roots; this repeated to the other two heaps, and it is complete. Air must now be given in the middle of the day by lifting the light a little behind. As the roots come through the sides of the heap of mould, other must be heaped round that for the roots to run into, and at length the mould may be levelled all over the frame to a good foot deep. A glass should be kept in the bed to enable you to look to the temperature, which should never be allowed to get below 65, and, as the fruit is swelling and approaching ripeness, not less than 75, but more will not injure them.

LINING THE BEDS.

When there is any indication of the temperature getting down, as will always be the case after three weeks, you must be prepared with a quantity of hot dung to line the bed, as it is called. This is done by taking away all the dung that stands beyond the frame down straight to the ground, in front and one end, as quickly as possible, and even to undermine it a little, and place there fresh hot well-prepared dung to take its place, well closing it up and putting fully as much beyond the frame as there was at first, and sloping it out like a bank besides. This accession of heat will be found to reinstate the temperature, and perhaps somewhat more. And, as soon as it is declining again, serve the back of the bed and the other end just in the same way. Heat must always be economized from the first, by covering the sides of the dung itself with mats, or old carpets, or hop-sacks, or wrappers, for otherwise a good deal of heat will escape without doing any good part in the operation. The frames ought also to be well covered of nights from the first, but wherever steam arises from the bed, it must have vent by a slight tilting of the light at the back. As the plants throw out their side shoots, observe if there be any incipient fruit, and, if not, stop them at the third joint. If there be any, merely regulate the shoots so as to keep out of each other's way, and fill the space allotted to them; take away altogether, or materially shorten, any which indicate no fruit. Do not allow more than three fruit to remain on one plant; and if you are growing for show, where size is an object, leave only the best, but you must not trust to the selection until the fruit has fairly indicated which will be the most handsome; generally speaking, a vine will perfect three handsome well-flavoured fruit, but they should only be one on a branch. There may be exceptions, and we have seen, after every vine had borne its three, the plants set off again and keep bearing fruit of good flavour, though small size, up to the very end of August. It is necessary, of course, to place the fruit on some flat dry surface, and it is almost impossible to give too little water, or too much heat, if the plants be but kept from downright flagging, for on this depends much of the flavour; and so ticklish is this quality, so easily is it effected, that a sudden chill, by giving water of lower temperature than the frame, or by allowing the heat of the bed to go down materially, will disappoint the grower of the best kinds.

IN LATE CROPS OF MELONS.

Independently of sowing in March or later, and thus working for later or successive crops, a second crop may be promoted by cutting back to a strong joint any vine that has done its work; so that you keep up, by constant linings, the proper heat of the bed, new lateral shoots will be made, and a new season of bearing be commenced, sometimes as prolific as the first. The power of the sun does much towards this second crop, but the heat of beds must be preserved by linings, or the fruit will not be matured. Vine after vine of those which have given early fruit may be cut back until the whole are thus prepared for the second or late crop. Fresh compost may be spread three inches thick all over the bed, and the other soil mixed with it as well as it can be forked together without disturbing the roots; good refreshing waterings with water heated to 70 or 80, and then close up the frames a few hours, will be all that is required, except that very little air need be given (and that little at the back) until you see the vines making their new lateral shoots. They may then be treated as new vines—the heat kept up as much as possible by linings or otherwise, air given occasionally, and all the sun; the same pains taken with the fruit, and even greater restriction as to the number each vine is to bear. The fruit will, perhaps, not be so large, but it will be as finely flavoured, if the same care is taken about heat and cold, and restriction as to water, except when the plants absolutely require it to prevent their drooping.

TO GROW MELONS UNDER HAND-GLASSES.

Prepare, by digging out a space four feet wide, and as long as you please, and one foot deep, a place for the reception of three feet thickness of good stable dung, or dung and leaves; let this be piled up properly, and the foot that has been taken out of the bottom, may be thrown at top of it, evenly spread over the surface of the dung, or dung and leaves. This shall be the last week in May. Bring out the plants all ready to turn out of their pots, and down the centre of this heap sink the balls of earth, just as they leave the pots, up to their edges, three feet six inches apart, placing a hand-glass over each. This is to be tilted on the south side on hot days, and kept close down in cold weather and of nights. They will soon begin to find where they are, and grow, and want to get away from under the hand-glasses; by the middle of June there will be no great danger of their being hurt, therefore the glasses may be propped up at the corners, the branches regulated, and pegged into their places, because otherwise high winds might bruise and break them; besides, the certainty of blowing them out of their proper situations. If any of these branches show no fruit, they must be shortened back, to throw out laterals that will. Fruit that begins to swell must be placed on slates or tiles. The plants must have water in dry weather, but the glasses will be a preservative against too much water going to the centre of the plants. There may be a heavy well-flavoured crop in a good season; but in this climate there is always some risk attached to adventures of the kind. Nevertheless, growing both Melons and Cucumbers under hand-glasses is an old practice, and has been found to answer well in many seasons.

SORTS TO BE GROWN.

Those who have attended Melon feasts and shows many years, will hardly fail to remember how very frequently some varieties beat all the rest for flavour, yet there are many kinds eatable in one locality, that are scarcely so in another. One of the very best flavoured Melons in this kingdom, we hesitate not to say, is the Windsor Prize. We have seen it cut against twenty kinds, and it has distanced them all. Of the Green-flesh Melons, that of Duncan's is both the most handsome and the best flavoured. A very great favourite all last year was the Beechwood Melon, whose fruit deserves all that has been said of it. The Cabul Melon has been made so much of, that a man had need arm himself before he ventured to give an honest opinion; but there have been more nasty Melons grown and eaten under that name the past season than any other, and we have to regret that if there be one among the numerous Cabul Melons worthy of a place in a garden or at a table, we have not met with it, and shall be pleased when it is our good fortune to do so. That there are some excellent Melons imported from the East there is no doubt, but until we know more about them we must take the words of the people who have seed to sell; meanwhile we shall content ourselves with the sorts we have mentioned, and the Early Cantalope, and if it ever be our good fortune to meet with any thing to beat the Windsor Prize, we shall hail it as a sort that every Melon lover ought to possess at any cost.

SAVING SEED.

It is one of the most difficult things in the culture of the Melon to secure the best seeds, and for this reason Melons ought to go to table cut, and the inside cleaned out, but there are other reasons scarcely less important. If the gardener cut a Melon in half before it went to table, he could throw an ill flavoured one aside; and another reason is, the nasty mess which the pulp makes when the fruit is cut in a room; thus three decided advantages would be gained if some wise employer would order the Melons that come to table to be halved and cleaned out. First, it would prevent a bad one ever coming to table. Secondly, it would save a disagreeable mess. Thirdly, the gardener would secure his seed, which, for his master's sake, should be from the best the beds have produced. But as this is not permitted, and we suppose it will take time to persuade people to have a Melon cut beforehand; why, the gardener has to look out in time, and he must, at all risks, secure the first and best, and the most likely to answer his expectation; for there is no dependence in what goes once to the parlour, if there be a second fruit there. We once saw two Melons cut by a worthy gardener now no more, and there were a dozen persons at table; one was good, the other good for nothing. One man swept every seed from the good fruit into a plate, and took half the seeds from the other and put in its place. This trick was unseen by most, but he disappeared for a few moments, squeezed the juice and pulp through a towel, and pocketed the seed dry. It was curious to see how careful the gardener was to take every seed from the best plate and put it on one side, as the best he had had that season; but on being set to rights on that head, to the surprise of the man who had got the right seed, he informed him before the company, that he should want a dozen seeds, but that he might have the rest, only that he expected half-a-crown a seed. It is needless to say, the seed was returned at the table, and the man did not appear there afterwards. We only mention this, to show that once out of a gardener's hand he could depend on nothing.

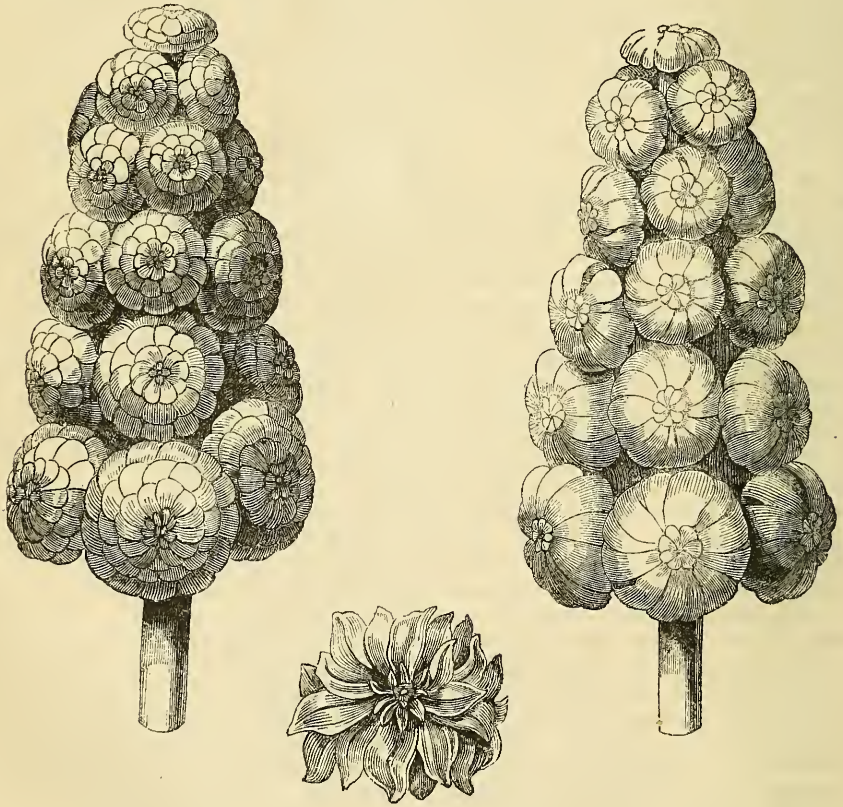
In conclusion, the culture of the Melon is so simple, and the fruit, when high-flavoured, is such a luxury, that we wonder any garden is without two or three lights of it, at any rate, more especially as the dung we use is worth all it costs, after it is done with for the Melons.

PROPERTIES OF FLOWERS.

This important subject has been appropriated by one person to himself, and subsequent attempts to supersede him have failed. We neither wish to assume originality, nor desire to do injustice. Such, however, has been the reception of the laws laid down in the papers on the properties of those flowers more immediately claimed by florists, that we have no course left us, but that of adopting them as our guide in estimating the qualities of new flowers. We feel the necessity of upholding a standard of some kind, and an ideal one is the best, because it is beyond our reach, and therefore is the less likely to be surpassed or superseded. It has not been so with the older florists; they have given a standard too easily to be obtained, and consequently flowers have been brought to equal, and even surpass the model; and then a new standard has been required. The papers first printed and published for the Metropolitan Society of Florists raised an ideal standard, which we can scarcely hope to reach; but as the nearer a flower is brought to it the better, and as there is no hope of surpassing it, we cannot dispute the propriety of making such model the general standard.

This subject has been somewhat prematurely forced upon us by the remarks of the Gardeners' Gazette, in which it is asserted that Dr. Lindley has pirated from the Gardener and Practical Florist the engraving which appeared in the Chronicle illustrative of the Properties of the Hyacinth.

Now, although we eschew the path of controversy altogether, we nevertheles feel bound to correct a statement so manifestly untrue; and, therefore, without intending offence to any party, we would remark that the *first* engraving illustrative of the Properties of the Hyacinth was published in the Gardeners' Chronicle for May 1841, while those in the Gardener and Practical Florist did not appear until April 1843. And as evidence that neither the one nor the other was a piracy, we subjoin a *fac simile* of each as they appeared in the respective works.



PROPERTIES OF THE HYACINTH,

As defined in the Gardener and Practical Florist.

"Some of these are already appreciated a little, but none sufficiently distinct. There are a few of the present varieties which have long spikes of flowers, and those very compact—both of which are desirable—but they for the most part have very ill-shaped pips. There are others which have very prettily formed pips, of a great size, but they are far apart on the spike, and some hang awkwardly; and those who exhibit the flower, know but little as to what caprice is to decide their fate; but as the time when the flower can be seen forced has arrived, and the period for showing in pots is approaching, we take the opportunity of defining a little the properties which should be esteemed; as nearly all the points have been attained in different flowers, there is every reason to hope, that as soon as we persevere in raising seedlings in this country, and force the Dutch to follow the example, we shall make rapid advances toward obtaining several properties in the same flower. We commence with the pip.

"Each pip or flower should be round and not ragged. The petals should be broad, thick, blunt at the ends, not pointed, and reflex enough to throw up the centre well. The foot stalk should be strong, and hold the flower out stiff in a vertical position, that is, facing the spectator, and by no means weak, to allow the pip to hang with the face sloping toward the ground. The foot stalks should also be of a length to make the pips touch each other and no more. The pips should be large, for unless the pips be large they cannot touch each other without very short foot stalks, and the flowers would be so close to the stem, that the truss itself would be no size. Double flowers should have the rows of petals above each other very regularly imbricated, so as to throw up the centre. The outer petals, therefore, of a double flower need not reflex, and should not reflex so much as a single one, because the centre is raised by the second and third rows of petals.

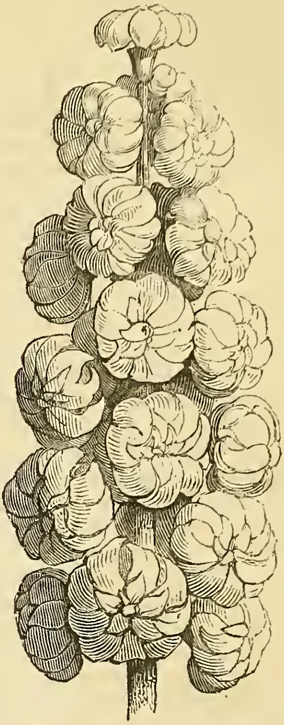
"The spike should be bold, round, compact, and pyramidical, with a number of flowers at the bottom, gradually diminishing to a single flower at the top. The flower stem should be very strong and upright, and no part of it should be seen from the lowest flowers to the top, in consequence of the closeness of the pips to each other.

"The colours should be bright, clear, and dense, whatever the shade; and any better approach to scarlet, blue, or yellow, than those shades we now possess, would be highly esteemed; flowers with dark eyes, very clear outsides, and those with striped petals, would be held to be better than selfs in general, but would give no point against form."

PROPERTIES OF A GOOD HYACINTH,

As defined in the Gardeners' Chronicle.

A well-grown Hyacinth should be of a compact pyramidal form, with a strong, tall, and upright stem; supporting numerous large bells, each attached by a strong footstalk in a horizontal position to the stem. The bells should be perfectly double, composed of broad, thick, waxy petals, with the centre of the flower raised, rendering the form convex. The bells should occupy about one-half the length of the stem, with the uppermost bell erect. The flowers, whether whole, coloured, or striped, should be clear and bright; those having a contrast of colour in the centre are most esteemed."



"LADIES' BOTANY" AND "BOTANY FOR LADIES."*

This subject is rather forced upon our notice by the two works which bear these respective titles; the first by Dr. Lindley, the second by Mrs. Loudon; two authors who agree at least in one point, the adoption of the natural system, and the rejection of that of Linnæus. Dr. Lindley says, "It seems to me there is a confusion of ideas in what is urged in favour of the Linnæan system, and that its theoretical simplicity is mistaken for practical facility of application. That the principles of the Linnæan system are clear and simple, and easily remembered, is indisputable; that student, indeed, must be remarkably dull of apprehension, who could not master them in a day. But is its application equally easy? That is the point." And then he proceeds by showing cases in which it will fail the student altogether. Mrs. Loudon says—"There was something in the Linnæan system excessively repugnant to me. I never could remember the different classes and orders, and after several attempts the study was given up, as one too difficult for me to master." Mrs. Loudon, therefore, was one of those students "who could not master them in a day." Dr. Lindley rejects the Linnæan system on much better grounds than the mere difficulty of understanding them, for he asks, and there is a volume in the question, "what have you done towards discovering a genus and species, when you have learned the class and order?" It is true in many cases we shall have done but little, unless we can pursue the subject further by reference. However, our business is not to decide which is the better system of Botany, the Linnæan classes and orders, or the natural orders; if it were, Dr. Lindley's evidence might assist us in forming a judgment: he says—"Now I distinctly assert that, in determining the natural orders of plants, there is no difficulty greater than that of making out the genera on the Linnæan system. In reality it is the same thing, only with a different result. In the one case it leads to the mere discovery of a name; in the other, to the knowledge of a great number of useful and interesting facts, independent of the name."—"This," he further observes, "is so strongly felt by all botanists of any experience, that they never think of using the artificial system themselves; they only recommend it to others." The most extraordinary fact connected with the publications before us, is their similarity of titles, objects, and avowed purposes; not that we always consider the avowed purposes have any immediate connexion with real purposes, but between book writers and the public, as between the magic lantern and the spectator, there is a curtain on which is reflected just as much as the public is intended to see, while the exhibitor and his apparatus are in the back ground, or out of sight. Dr. Lindley's Ladies' Botany was published in 1841, and is a clever introduction to all the peculiarities of the natural system, just, by the way, as fit for gentlemen as ladies, though the title indicates that it was written for their use. There is a good deal to learn before Botany can be understood, and if forty people have to explain the same orders, and the distinguishing characteristics of each order, one must expect a good deal of similarity. But there are many ways of describing even simple things, to say nothing of a complicated science like that of Botany. Dr. Lindley's mode of communication is by a series of letters, written in a free and familiar style, explaining, as plainly as they can be explained, all the peculiarities by which the many orders are distinguished. But he does not pretend that scientific Botany is to be learned by a hop-step-and-a-jump process. He says, "There is, however, no mistake into which the public are apt to fall much greater than the notion that Botany is a science of easy acquirement. Like all other branches of natural history, it is formed upon a close observation of numerous independent facts, and can only be understood as a science after long and attentive study. Nevertheless, a certain amount of it may be acquired without extraordinary application." The chief recommendation of the work is, that so far as you go, you gain information. The orders, and the genera of which the orders are composed, are one by one explained; so that beginning with Ranunculaceæ, you are made acquainted with the characteristics of the natural order, and of the genera which are comprised in it; and then you are master, as it were, of that order. Whenever you find a flower, however strange it may be, you can tell whether it belongs to that natural order, by several distinct features in the construction of the plant, the flowers, seeds, roots, or leaves; and if it be of that order, you may also determine the genus by some other points with which your first lessons will make you familiar. Thus, then, although you will be totally unacquainted, perhaps, with the peculiarities of any other, you will be gratified so far as that one order is concerned. Proceeding with another lesson, you will in time master another of the orders; and as you store your mind with these orders, and the genera belonging to them, you will keep adding to the sources of pleasure to be derived from the study of Botany. We, however, quite agree with Dr. Lindley, that the science of Botany is not easy of acquirement; and were we disposed to cavil about the comparative ease by which the two systems are to be acquired, we see but little difference. Nor do we admit, from all we have yet learned, that the natural orders will meet the difficulties of Botany more effectually in the end, or that it does do so in the beginning. The artificial system has been found deficient, because no one goes on with it, or carries it far enough. There is room for more classes and orders, and the natural system will require additional orders, or (as indeed they see now) some of the present ones enormously stretched to make them subservient to new subjects, or rather subjects not yet known. We observe in both these works, evidence of the total abandonment of a notion once entertained, that the natural orders made a distinction between plants of a poisonous nature, and those not so. Indeed, if we mistake not, this was the very ground on which it was so strongly recommended in Mr. Loudon's Encyclopædia of Plants; we have now, however, confessedly the rank poisons, the deadly hemlock and dropwort, in the same order as carrot, fennel, and parsley; and many other instances equally striking occur; so that there is no dependence on this test, nor will it, we think, be mentioned again. The formidable task to be undertaken to become acquainted with Botany, may be appreciated by the fact, that there are two hundred and twenty natural orders, and that in these orders there are many genera; many of the orders comprising genera admitted by distinct rules, and some by exceptions. In looking at the two volumes, we perceive this difference in the plan—Dr. Lindley's is a series of letters, in which the orders and form of the genera are elaborately, though plainly, described; Mrs. Loudon's is a series of articles, explaining the most extensive and familiar orders and genera in the first part, and then giving, in a scientific arrangement, the entire two hundred and twenty orders, with their distinctive characteristics; and this difference in the plans is some justification of Mrs. Loudon in following with a "Botany for Ladies" so close upon the heels of Dr. Lindley's "Ladies' Botany." There is another distinction belonging to Mrs. Loudon's—the author rarely diverges from the straightforward path, but keeps to the point under consideration very closely; whereas Dr. Lindley frequently digresses, we do not say unprofitably; for instance, in speaking of the blanching of celery, he says—

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* Ladies' Botany; or, a familiar Introduction to the Study of the Natural System of Botany. By Dr. Lindley. 12mo. London: H. G. Bohn.

Botany for Ladies; or, a Popular Introduction to the Natural System of Plants, according to the Classification of De Candolle. By Mrs. Loudon. London: Murray.

"The consequence of light and air acting upon the surface of leaves, is the forming in their substance, which is originally of the same yellowish-white that you see in seeds, a green colour, which is more or less deep in proportion to the degree in which the light is powerful; thus a plant which stands exposed to the sun all day long, has its leaves of a darker green than another which grows among other trees, or near a building which throws it into the shade for a part of the day; and the latter, again, is darker green than a plant which grows at the north side of a high wall, or in an enclosed court which the sun's rays never enter. In like manner, if you cause a plant, or any part of a plant, to grow in total darkness, it will be entirely destitute of greenness; or, in other words, the substance of the plant will remain of its original yellowish-white, because no green matter can be formed but by the action of light; and if a part already green is kept for a long time in darkness, it will become yellowish-white, in consequence of all its green being destroyed by the peculiar action of the atmosphere upon plants in darkness.—This is the explanation of blanching. But mere loss of colour is not the only consequence of plants being kept in the dark; you have already been told that poisons, when it is the nature of plants to yield poisons, are also formed in leaves by the action of light; the absence of this wonderful agent will therefore prevent the formation of poison, as well as the formation of green colour; and hence blanching renders poisonous plants harmless. Thus, in the celery, but a small portion only of the leaves is exposed to light; the whole of the stem and of the lower part of the leaves is buried in the earth; the small quantity of noxious matter that might be formed by the few leaves which are allowed to bask in the sun, has to pass down the buried stalks of the leaves before it can reach the stem, where it would be laid up; but you know the leafstalk of the celery is very long, and anything which has to filter from the upper part of such a leaf to its bottom has to take a long journey, in the course of which it is constantly under the destroying influence of darkness; so that before it can reach the stem, it will all have perished."—*Lindley*, pp. 31, 32.

Then again upon the subject of hybridizing, though we deny altogether the facts in practice, he offers the following:—

"It has been discovered, that if two plants are very near relations, the pollen of one will act upon the stigma of the other, just as well as if the pollen was produced by the anthers of the plant to which the stigma belongs; but when the seeds so obtained are sown, they change to plants which are not exactly like either of those from the intermixture of which they sprang, but which bear a strong resemblance to both. For instance, if you take the pollen of a plant with blue flowers, and place it upon the stigma of one which has red flowers, the seed will produce a plant having purple flowers; or, if a plant with a very vigorous mode of growth is thus intermixed with another of a very dwarf habit, the plants which spring from seeds thus procured will be neither very dwarf nor very tall; and so on. This is the secret of the improvement of Pelargoniums, which happen to intermix very easily: a sort with large ugly flowers is intermixed with one with small neat flowers, and you have, in all probability, a variety with large flowers, that are as neat in appearance as those of the small flowered kind. I need not particularize, with more minuteness, the way in which plants respectively influence each other; a little reflection must render it apparent to you, now that you understand the principle. I must not, however, omit to tell you, that intermixture can only take place between plants very closely related to each other, and that distant relations have no influence the one on the other. You could not hybridize a Geranium with a Pelargonium, nor those Pelargoniums which have fleshy tumours for stems with such as have slender stems, nor even a Gooseberry with a Currant; but to the power of intermixing the slender stemmed real Pelargoniums there seems to be no limit.

"That nature acted thus, long before man discovered her secret, there can be no doubt, for winds and insects are as skilful hybridizers as we are; and the different races of apples, pears, and other fruit, which have in all ages sprung up in gardens, are, no doubt, indebted for their origin to such circumstances; but it is only in modern times that this mode of proceeding has been reduced within certain rules, and that hybridizing has become a fixed and useful art."—*Lindley*, pp. 40, 41.

When we say we deny the facts, we allude to the statement of the offspring of two dissimilar plants being like neither of them, but intermediate; because we, who have carried out the practice many years, know right well that there will be plants like both parents, and often every conceivable grade between the two besides. However, this is immaterial. With a notice of the Walnut-tree, we shall close our extracts from this work:—

"The stamen-bearing flowers are on one part of the branch, and the pistil-bearing on another, as in the Oak and its allies. The former are arranged in thick, green, curved, cylindrical spikes, consisting of very short pedicles, bearing obliquely on one side about twelve stalkless broad anthers, surrounded by about six green scales. These spikes fall off soon after the anthers have burst and discharged their pollen.

"The pistil-bearing flowers grow in clusters of two, three, or more, and are composed of an oval, downy ovary, crowned by a minute four-lobed calyx, four very small petals, and a pair of fringed stigmas, curved in opposite directions. The interior of the ovary presents a minute cavity, in which is one erect, egg-shaped ovule, seated on a pale lobed substance, a longitudinal section of which is extremely similar in form to the Russian eagle. The latter substance may be supposed to contribute to the nutrition of the embryo, but its use has not been yet sufficiently inquired into.

"In course of time, the stamen-bearing flowers fall off, as has already been stated, the pistil-bearing flowers alter their appearance, lose their stigmas and all trace of a calyx and petals, become much increased in size, and at last change to clusters of oblong, deep-green, fleshy cases, which crack irregularly and drop, leaving behind them the pale brown tesselated nuts, that are sold in the fruiterers' shops. Examine one of these nuts, with which you ought to be well acquainted, because it is of such every day occurrence; and you will find that it might serve as a text for a long and curious disquisition. With only the most striking points, however, do I propose to occupy your attention.

"The nut of the Walnut-tree, deprived of its outer fleshy shell, is of the same nature as the stone of a peach or plum; that is to say, it is the innermost layer of the seed-vessel, grown very hard, and separating from the outer layer. At a very early period, the two layers formed but one homogeneous body; and when the inside began to harden, without any corresponding change in the outside, still the two held firmly together by a network of veins, the impressions of which give rise to the channels that divide the surface of the nut into numerous irregular compartments.

"In one respect the nut of the Walnut differs essentially from the stone of a peach. In the latter it is not divisible into valves; in the former it readily separates into two equal valves. These are an evidence, although only one ovule is present, that this fruit is in reality made up of two carpels, as was indicated by its two recurved stigmas. Now examine the valves separately; each is cut off from the other at the base, by an imperfect partition that rises up from the very bottom; but, above the base, they freely communicate with each other. Their inner surface is marked by numerous elevations and hollows, of a most irregular arrangement, besides which a small plate, originating in the partition at the base, but standing at right angles to it, curves upwards, and cuts each valve imperfectly into two cells; so that, what with the partition at the base, and the plates at right angles with it, the interior of the nut is, before it is opened, cut into four incomplete cells.*

"In the centre, where these imperfect plates cross each other, stands the seed, which in growing adapts itself both to the plates themselves, and to the inequalities in the lining of the nut, so that when full grown it is four-lobed, and deeply divided all over by irregular fissures.

"The seed, like the ovule, stands erect in the cavity of the nut; but the embryo is inverted, its base or radicle being at the point of the seed. The cotyledons are applied face to face, and each participates in the convolutions of the other, until they meet the elevated point of the central plate on which the seed rests; thence they separate in a downward direction,

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[*] "In technical language, this nut must be described as consisting of two opposite connate carpels, whose margins at the base are turned inwards towards the placenta, whence they are partially produced as far as the back of the cavity of the carpel, forming an adhesion with it, and half dividing the cavity into two spurious cells."

and consequently each pair of shrivelled seed-lobes consists of one cotyledon only."—*Lindley*, pp. 292—294.

From these extracts it will be seen that the Professor's observations are not strictly limited to the necessary instruction for a student in Botany; and some of the elaborations are more adapted to the scholar who is far advanced; nevertheless, those who commence the book, and go patiently through it, will have learned enough to make Botany a very delightful study and recreation. Mrs. Loudon less elaborately, perhaps as plainly, describes some of the most important orders and their genera; and then, as we before observed, gives us the leading features of the whole two hundred and twenty orders, scientifically arranged; and our quotation shall be from one of these:—

"The order Violaceæ, though not a large one, contains several genera, but the most interesting is the genus Viola, which includes, among many other species, the Sweet Violet (*Viola Odorata*), and the Heartsease (*V. Tricolor*). The flowers of both species have many claims to admiration, but they do not add the charm of regularity in construction to their other attractions, as, in fact, few flowers are less symmetrical. The flowers of both are nearly alike in their details; but to avoid confusion, I will describe them separately. The calyx of the Heartsease consists of five pointed distinct sepals, two of them rather smaller than the others. These sepals are not attached, as in most other plants, at their base, but so as to leave nearly a quarter of their length standing up, far beyond the place where they are fixed to the receptacle, so as to form a sort of border or cup round the stem, and between it and the flower. The sepals are green, but they are edged with a delicate whitish membrane at the margin, scarcely to be seen without a microscope. There are five petals, which are also irregular in their construction, two of them being much larger than the others, and generally of a different colour; and one even of the other three being quite different in form to its companions. The two large petals at the back of the flower, which in the common Heartsease are generally dark purple, are laid over each other, and behind the two below them. These two side-petals, which form the centre of the flower, are both furred at the base; and the lower petal, which is placed between them, has its claw drawn out behind into a spur, which passes between two of the sepals; and which, when the flower is looked at from behind, appears to be part of the calyx. The furred part of the two side-petals forms a triangular, roof-like opening, peeping out of which is seen a small pale-green ball-like substance, which a fanciful imagination might liken to a head looking through a dormer window; and this is all that is to be seen in place of the usual apparatus of stamens and pistils. As all seed-producing flowers must have stamens and pistils, and as it is well known that Heartseases and Violets do produce seed in abundance, it is clear that these important organs are not wanting; but where are they? It is easy to guess, after being so far initiated in the mysteries of Botany, that the little globular body is a part of the pistil; but where are the stamens? It is necessary to pull the flower to pieces to discover them. Commencing this work of destruction, which I always feel remorse at perpetrating, for I love flowers too well not to feel pain at destroying them; commencing this work, I repeat, the petals and the sepals must be carefully removed from the stem; a task of some little difficulty, as both sepals and petals are firmly attached to the receptacle, and the lower petal must have its spur opened with a pin to avoid hurting the delicate organs it contains. When the outer coverings of calyx and corolla are thus both removed, the seed-producing organs will be discovered, and it will be found that they consist of five very curiously-formed stamens, with as singular a pistil, in their centre. The stamens have no apparent filaments, and the anthers, which seem to be inserted in the receptacle, look like seeds, each tipped with a bit of brown skin, and having what appears to be a white rib in front. This rib is the anther; and the broader part is the dilated filament, which is drawn out beyond it, on both sides, and above, so as to form the brown tip above the anther already mentioned. Two of the anthers have each, in addition to these peculiarities, a long tail, which the spur of the lower petal concealed, when the flower was in a perfect state. The pistil consists of a large ovary, full of ovules, with a narrow style, which is drawn out into the hollow globular termination which is seen through the triangular opening in the flower. The globe has an opening in front, under which is a kind of lip, which looks like a shutter let down to show the opening; and though, from its thick fleshy nature, it looks like a stigma, it is only the outer covering of that organ, for the stigma lies within the opening. In this manner the stigma and anthers are completely concealed; and thus it will be seen, that nothing can be more complex and intricate than the construction of the flowers of the Heartsease.

"Who could suppose that all these elaborate details would be necessary, to illustrate so simple a flower as that of the Violet? And yet the construction of the flowers of the Violet and those of the Heartsease are essentially the same. The sepals of the Violet are extended at the base, like those of the Heartsease, and the corolla consists of the same number of petals, which are equally irregular in their form, though not in their colour; the lower petal is drawn out, in the same manner, into a spur, which is much longer than that of the Heartsease, though the rest of the flower is smaller. The stamens are formed with the same regular irregularity, only the tails of the two irregular ones are larger and stronger, in the same proportion as the spur is larger which is intended to conceal them. The pistil is of the same shape, with the same curiously constructed and perforated style, which is bent in its narrow part, and swelled out into a hollow globe at the tip; and in both species, the ovary is one-celled with three parietal placentas, that is, with three nerve-like projections from the sides of the capsule, having four rows of seeds attached to each. The capsule looks like a smooth shining berry, and it remains partially shrouded by the calyx, till the seeds are ripe; when it bursts open with an elastic spring, and divides into three valves, each of which has the placenta bearing the seeds in its centre.

"In all these points the Heartsease and the Violet are alike; but they differ materially in the leaves, which in the Violet are broad and heart-shaped, without stipules; but in the Heartsease are small and ovate, with such very large and deeply-cut stipules, that they are by most persons mistaken for the leaves. I may here be asked what are stipules, and in what do they differ from leaves? In answer to the first question, I can only inform my readers that stipules are generally little leaf-like bodies, which seem to act as attendants upon leaves, as bracts seem to wait upon flowers; but in what they differ from leaves, except in size and shape, I have not been able to learn. Even Dr. Lindley, in the last edition of his Introduction to Botany, says, 'What stipules really are is not well made out.'

"The Heartsease and the Violet differ also in their habit of growth. The Violet is a creeping plant, with no stalks but those supporting the flowers, while the Heartsease stands erect, with a thick square stem, so strong, that, notwithstanding its succulent nature, it may be trained like a little tree."—*Loudon*, pp. 279—284.

Each volume, therefore, has its claims upon the botanical public, but, for the life of us, we can see no good reason for the title of "Botany for Ladies;" especially so close at the heels of a work which had been as unmeaningly called "Ladies' Botany."

IRRIGATION.—THE FORCE PUMP.

We have already, in a former paper, shown the effect of the elevated pump. This was supposed to be by the side of a pond or stream, at the lower end of the ground, and the labour of raising the water by a common pump is not greater than raising it from a well to the surface of the ground, as in other cases. But it is easy to raise water by a force-pump to almost any height—such force-pumps as are used in houses to throw water from the lower to the upper apartments. In this case, all the apparatus but the pump itself would be the same; the cistern, or tub, or tank, or whatever it may be called, which would, in the case of the elevated pump, be under the spout, must be put as high, and have the pipe attached to it to go under-ground to the top of the hill. The difference would be in the plan and the construction of the pump. Instead of being on the platform it would be on the ground; and, instead of a common lift-pump, it would be a force-pump, something of the plan of garden engines, with a pipe to reach up to the tank, which pipe should be as large as the pump will carry well, and fill well. For it matters not by what means the water is carried to the proper elevation, so there be head enough of water there, and that there be a sufficient height above the hill on which the top or highest tank is to be formed to make the water run free. There is, generally, very little difficulty in finding water at the lowest part of the ground: generally speaking, if the place be properly drained, a pond may be formed at the lowest part to receive all the water from the drains of the whole place; and this water will, in most cases, be found sufficient for all the purposes of irrigation. It may be, too, that a ditch near the lowest part of the ground brings water from neighbouring lands, all of which might be appropriated, if a proper receptacle be made for it, with a provision for the surplus to run away. In this case, nothing is wasted by the operation; the ditch may be made to run all the water into your pond or excavation, or tank, or whatever it may be, and a proper outlet may allow the water, when full, to run off again; the water-way will be just as complete as if it went past the place without running into the pond at all. Here, then, by the apparatus and the tanks at different spots, where they are most required, precisely the same as recommended in a former paper, a common force-pump may be on the ground, and force the water to the elevation required, with just as great facility as the elevated pump would lift it there. The only point in favour of the elevated pump would be in remote places in the country, where almost every worker in wood understands and can make the common lift-pump, whereas hardly anybody within miles understands the force-pump, or could make one, even if ordered. In such places, the lift-pump, placed on an elevated platform, would be easiest made, and best kept in order. It may be observed, that it would, perhaps, be as cheap to sink a well on the highest part of the ground at once, and so fill the highest tank on the spot. This, under some circumstances, may be true; but if there be a possibility of obtaining pond, or ditch, or drain-water, by extra trouble and cost, that should be used. It is a known fact, that the pump supply of some gardens is the greatest evil to contend with, and many a suffering crop owes its condition to the water which has been used. Now, all well-water is more or less injurious as compared with rain-water, or pond-water; and although it may be improved by exposure to the atmosphere, there are periods when there is no time for exposure, and even when exposed a considerable time, it is, and always will be, inferior to rain, or river, or pond-water. This is one of the considerations which would make us sacrifice a little at first, to appropriate the water of a ditch, or of drains, or of a pond, or brook, rather than have recourse to wells, and especially if the water lay deep. The force-pump should be covered up against frost, or the barrel of it will burst; and this is one of the reasons which make us prefer the elevated pump on the platform, as pointed out in a previous article on this subject.

HORTICULTURAL NOTES.

Hardiness of Early Peas.—By some experiments made by Mr. Griffin of Cowley, near Exeter, it appears that the Early Warwick Pea is more hardy and prolific than either Cormack's Prince Albert, or the Early Kent; and being a stronger grower, also requires more room than them. Cormack's Prince Albert is, however, the earliest of these three varieties.

DESCRIPTIVE LIST OF THE BEST TWELVE PANSIES.

1. Queen of Whites, *(May's.)*—This I consider to be the best white Pansy that has yet appeared in Scotland. It is round, of a fair substance, and perfectly smooth in the edges. The colour is near to that of a French white, has a rich, well-defined blue eye, and at the present day no collection can be complete without it.

2. Rob Roy, *(Campbell's.)*—The ground colour of this flower is a creamy white, with a large, dark, well-proportioned eye. Laced round the lower petals with a narrow light purple belt, almost as perfectly as if it had been drawn by the hand, it has good substance, " as round as my shield," opens prettily when growing, and certainly will be an acquisition to the world of Pansy fanciers, as it is new.

3. Bridegroom, *(Major's.)*—A flower of famous substance, with a clear, narrow, ring-shaped white ground surrounding the eye, and laced with a broad band of rich velvety purple on the three lower petals; the upper petals being of the same colour as the lacing of the lower, and we may say, with certainty, that there are not six better Pansies than this in existence at the present day.

4. Prince Albert, *(Pearson's)*.—Has a fine yellow ground, very perfectly laced on the three lower petals with a reddish brown purple; has a dark eye, fine shape, and of excellent substance. The ground colour is equal to that of Thomson's Eclipse, but much finer in the lacing, and must be in every good collection.

5. Daniel de Foe, *(Finlayson's.)*—As a white-grounded flower, with dark broad purple lacing, and dark eye, there are but few that can surpass it. The purple is more rich and velvety in this than in most flowers, although, at times, it has a tendency to run the lacing into the ground colour; but when this is prevented, by shading or otherwise, it will make a capital acquisition to a stand of twelve blooms.

6. Fair Maid, *(Thomson's.)*—White on the three lower petals, with large dark blue eye, and upper petals of a light blue lilac colour, giving it a fine bold appearance. The shape is excellent, but the substance is not so good as some of the flowers in this list; but still it is the best of its class, and being a good show-flower, should be in every collection.

7. Flora Mc Donald, *(Finlayson's.)*—A flower with a pure white ground, the lower petals and two side petals are laced with a lightish blue purple; the eye is solid, and of the same colour; the upper petals are a little deeper in the colour of the purple, but still in fine keeping with the lacing of the flower. When this flower is full-grown, it is a rarity of its kind, as there are few flowers that possess a ground colour more pure than this. It may be justly termed a first-class flower.

8. Ultramarine, *(Smith's.)*—A Pansy of 1843, with narrow white ground, perfectly smooth in its edges, and solidly laced with that beautiful blue colour, called ultramarine. It is not naturally a large flower, but when well grown is remarkably fine, and in the style of Brown's Curion, but far superior to it in the rich colour of the lacing.

9. Haidee, *(May's.)*—This, in point of substance, is equal to Major's Bridegroom; almost the only difference is, that the white ground in this flower is a little broader than that of Bridegroom; but to cut its description short, it partakes fully and freely of the Metropolitan Society's rules, and should, at the present day, be in all first-rate collections.

10. Black Eyed Susan, (*Finlayson's*).—The three lower petals of this flower are of a lightish straw-coloured yellow, with a very dark eye; the two upper petals are blocked with a kind of rose pink purple; it is round, smooth, and has good substance. The only fault it has, is that, at times, there is a tinge of deeper-coloured yellow underneath the eye on the lower petal, but a few hours of the sun in general makes this all right. It is a fine bold flower, and being the best of its class, it should be in every collection.

11. Surpass Imogene.—Is of a lemon chrome yellow colour, with a very distinct dark eye, is of middling good substance; and so far as self-coloured yellow flowers are concerned, this is the best that has yet appeared in this country, although not faultless.

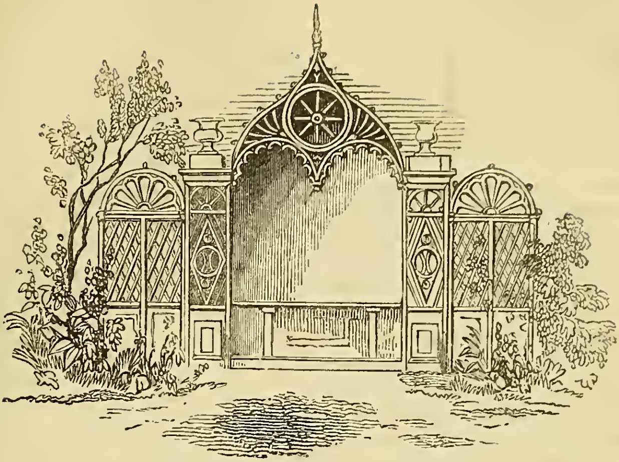
12. Defiance, (*Crombie's.*)—This is a flower with a white ground, dark eye, and purple lacing: it is in the style of Miss Stainforth; but is quite free from that yellow tinge that is generally thrown from the eye upon the lower petal of Miss Stainforth. The lacing of this flower is distinct and solid, and when well grown, it will be ill to beat.—*James Neilson, Falkirk.*

Seed Potatoes.—Unripened, and consequently watery potatoes, make the best seed roots, inasmuch as they always produce strong, healthy, vigorous plants; this watery matter being the germinative principle. Potatoes, therefore, which have been planted late in the season, or have been dug early in the season, or which have grown in boggy land, or in a mountain situation, are to be preferred; as under such circumstances the tubers are not matured, the farina has not been developed.—*Field Culture of Potato, by P. Cowan.*

Lashmar's Seedling Grape.—This is stated to be the finest out-door Grape in cultivation. It is a white grape, thin-skinned, two or three weeks earlier than any other, a first-rate bearer, and of excellent flavour. It is but very little known.

Forcing Sea Kale.—Supply warmth, nourishment, and darkness, almost how you please. Shut up the roots in a box of mould; cover up the roots in the open air with pots or leaves or ashes; do as you will with them to make them dark as they advance, and supply heat to the bottom, and it is sure to succeed; but where you keep a good supply of roots three years old, force them in a common hot-bed. Let them be served as asparagus is served; give them a hot-bed and mould enough for their roots; cover up the crowns six or eight inches with leaves, and then cover the frame with wooden shutters, or at all events cover up the glass, to keep out every particle of light. Open the top behind by tilting, to let off steam and regulate heat, and they will grow rapidly. Of course they must be examined frequently, and as soon as the tops appear large enough, they may be cut pretty close down to the crown. We tried one light with one of asparagus, in a two-light box, but both would do better separate.

Fish and Fish-Ponds.—As this subject is in some measure connected with pictorial gardening, will you allow me to ask for information on the following point; which, while it may or may not confirm my own opinion, will at any rate be doing a service to those possessing this agreeable appendage, by laying the matter before them? The simple question is this—should ice be broken during a frost? I am inclined to think not. I have a fish-pond about one hundred and thirty feet long, and twenty-five feet wide, ornamentally designed; its depth in the deepest part about nine feet. When at its fullest in the winter, it receives its supply from land springs, with an overflow drain at a certain height; it has a strata of gravel, sand, &c., in the upper portion, and the natural bed of clay at the bottom, by which means a good supply of water is retained in the driest summer and hottest weather. It has been made nine or ten years, and in no instance has any ice been broken, that I know of, for the purpose of giving air to the fish; and in no case have I lost even one fish out of five or six hundred. They consisted of carp, tench, and gold and silver. The two latter I took care, when I bought them, should be what are called "cold water fish;" and they have bred and grown very much. During this summer I caught some bleak, roach, dace, &c., in the Thames, and must have put in at least six hundred; very few, comparatively speaking, dying, unless badly hooked. When the frost set in, in December last, (which was both sudden and severe,) I perceived about a dozen of the *new fish* dead under the ice, and others in a dying state, darting about in an unnatural manner, or swimming on their sides. I then gave orders to have the ice broken round the pond, and found they came in swarms to those parts, gasping for breath; but notwithstanding I had the ice *daily broken*, I lost at least three hundred of the new fish, and even *a few of the old gold and silver stock*, which was never the case before, *when the ice was left unbroken;* and I cannot help thinking, that had I left it so on this occasion, (as it must be in many ponds when in their natural state,) I should not have lost to the same extent. Under these circumstances, what is the course to be adopted *in future*, to break the ice, or leave it entire?—*J. B. Watson, Surbiton Gardens, Kingston, Surrey.*



PRACTICAL GARDENING.

OPERATIONS FOR MARCH.

FLOWER GARDEN.

THE AURICULA is this month showing bloom, and the slightest frost is detrimental. Keep them cool, give them air when the weather is mild, and so far as tilting the lights behind goes, they require it always, frost only excepted. You must also take care that, if there be cold winds that would blow in upon them, a mat should be covered over the opening, so as to break it off without stopping out the air altogether. The early part of this month, that is, the first week or ten days, is the latest period for buying in plants which you are allowed to exhibit; as all societies disqualify, or ought to disqualify, plants that have not been in possession six clear weeks. Whatever varieties you feel yourself weak in, should be at once added to your stock; and it would be well, whether you are weak or not, to look round among the nurseries, to pick out any remarkably promising plants, for next to wanting them himself, an exhibitor will find them awkward in a competitor's hands. For this reason he should, during the first week, go round to all the growers for sale. As the blooms rise, watering must be attended to, and covering from frosts observed with great strictness. The effect of the frost, if it reached them, would be various: sometimes it checks the growth, sometimes cracks the petals, and always hurts the colour and crumples the flower. Nevertheless they are hardy, and bear a good deal without any apparent suffering in general health. Most of the shows round London are from the 20th to the 30th of April. The sorts which exhibitors ought to depend on for show and which should be got in by the 8th inst., for the reasons before given, are as follow:—

Green Edged.

Dickson's Matilda
Page's Champion
Lee's Colonel Taylor
Booth's Freedom
Pollett's Highland Boy
Stretche's Emperor Alexander
Smith's Waterloo
Hudson's Apollo
Dickson's Earl of Errol
Dickson's Duke of Wellington
Dickson's Prince Albert
Lightbody's Lord Lyncdoch

Grey Edged.

Fletcher's Ne plus ultra
Waterhouse's Conqueror of Europe
Dickson's Unique
Oliver's Lovely Anne
Kenyon's Ringleader
Sykes's Complete
Hedge's Britannia
Gaines's Privateer
Maclean's Unique
Fletcher's Mary Anne
Dickson's Duke of Sussex

White Edged.

Taylor's Glory
Taylor's Incomparable
Popplewell's Conqueror
Thorpe's Magpye

Self Coloured.

Redman's Metropolitan
Netherwood's Othello
Dickson's Apollo
Bury's Lord Primate *

Any or all of these are showable, and some seasons one comes well and another bad; in other seasons these are reversed; but all are occasionally fine, and should be grown by those who are anxious to win. Many, however, are desirous of making a fine show of flowers at home, and care nothing about public exhibitions. These may add the following, which are gay and varied, and much assist in a general collection, although they would be beaten if critically examined by the show flowers.

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* Glenny's Almanac.

Cockup's Eclipse
Metcalfe's Lancashire Hero
Gorton's Champion
Warris's Blucher
Franklin's Bellona
Gable's Duke of Wellington
Page's Duch. of Oldenburg.
Pearson's Badajos
Moore's Violet
Page's Lord Hill
Smith's Britannia
Yate's Lord Collingwood
Foden's Fair Rosamond
Pillar of Beauty *

In choosing these plants at a nursery, you should satisfy yourself that they are firm in the pots, well rooted, thick at the collar, where the lower leaves spring from it, and well-hearted, like a good cabbage on a small scale. They should be bloomed in the pots they are bought in, unless they are very small indeed, for disturbing them may check them; nevertheless, if there happen to be any fine plants in pots too small, they must be repotted in pots a proper size, without disturbing a single fibre of the root. Should there be any warm rains, and the wind be not blustering, the lights may be taken off, and the plants have the full benefit of as much as will fairly water them, but not more; the lights should then be closed in the evening and carefully covered; for though frost does not often follow warm showers, yet it will happen sometimes; and the plants are in more danger when the compost is wet. The same caution ought to be used after watering in the ordinary way, and it will be as well to mention, that rain-water is far better than any other, if it be pure, but if water is caught from a roof on which pigeons congregate, it will sometimes be injuriously strong of their dung when the water is low, and damage the whole collection. When you buy new plants, see that they are not pot-bound nor water-logged; for when a pot has been subject to the drip from a broken glass, or the drainage has been accidentally stopped, the soil in which a plant is growing will be found saturated so completely as to destroy an Auricula in a short time, so that it must at once be rejected if you are purchasing, and if it happen to one of your own plants, it must be shifted, the old crooks removed, new dry pot and crooks be placed there, and if the soil be sour, it must be all washed out carefully, and dry proper stuff substituted. The bottom of the pit or frame must be kept dry and clean, all dead leaves removed, and provision made for the water that falls through the pots to run away, instead of soaking into the ground. If, as is sometimes the case in March, the sun comes out an hour or two powerfully, cover the frame with a mat or light cloth, that will not shade too heavily, and tilt up the glass at the four corners, either with four bricks, or with small flower-pots, or wedges of wood, that the air may be freely admitted.

Dahlias.—Those which are not yet potted and set to work, may be done at once. Put them in pots no larger than necessary; and, indeed, some of the tubers may be cut away, to prevent the necessary use of too large a one. Here they will throw up their shoots from the collar when they are put into heat, and the cuttings must be taken off when about three pair of leaves long. Some of the more experienced cultivators have followed our previous directions, and by this time have cuttings well rooted. If they are in pots holding more than one, they must be placed in pots singly; and if any of them are of scarce kinds, which you are desirous of propagating, they may have their tops cut off just below the third pair of leaves, and these tops may be struck as before directed for other cuttings. The plants will strike out shoots on both sides, which in turn may be shortened, and thus an early struck cutting may be made the means of producing a number of plants, which is occasionally a great object, although it does not produce them so strong nor so serviceable as those of the first strike from tuber shoots. It is questionable, also, whether a plant so produced will bloom so well, although there are kinds that do not suffer from such treatment. All the cuttings, struck and not struck, should be watered over the foliage as well as their roots, and be shut up and shaded for a few hours; but it is a very good plan to water in the evening, at shutting-up time. As those plants which are not intended to be cut down, grow into a fair size for planting out, they should be removed to a cooler frame, that they may become gradually more hardened; for although nothing short of frost will hurt them, when prepared by cooling gradually, they would suffer considerably if taken from a hot-bed to the open air direct. In potting the tubers for breaking the buds to form cuttings, every appearance of decay, however slight, should be removed, even if it cause two-thirds of the roots to be cut away. Seedling tubers, that are to be planted whole, may be at once put into the ground four inches deep; they will not come up before the time they will bear the weather.

Annuals.—Whatever annuals of the tender kind are not yet sown, may be now sown on a slight hot-bed made in the ordinary way, but about two feet high, with six inches of mould on the top; on this you may place a common garden frame or hand glasses, and sow the seeds within the space they cover. Sow the seeds in rows, as the most convenient for the keeping of the different sorts separate. That they must be protected by glass is certain; even many of those which are called hardy, but which are nevertheles sufficiently tender to be killed by one degree of frost, re-

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* Glenny's Almanac.

quire the same treatment when sown so early, or they will not germinate; or if they germinate, will not live. Make the drills with the finger, and sow thinly, and place a label at the end of each row, and cover lightly. Sow also the so-called hardy annuals, that you wish to plant out early, for it will give you two seasons of blooming; for instance, these may be planted out in May in a forward state, and they will bloom almost as soon as those sown in the open borders are up and well growing. These hardy annuals may nevertheless be sown in open borders, for if properly covered up, they will not germinate until they will stand the weather.

Pansies will commence this month to bloom in the open air, and all of them begin to grow fast, unless there is frost to check them. It is well to cover them with any open litter, like peas haulm, which keeps off a good deal of frost, protects them from all the cold winds, and does not take away light. The beneficial tendency of this kind of litter to all dwarf plants through the winter, and early spring months, is either not half enough known, or being known, not sufficiently practised. Those in pots, under glass, should be shifted, if not done already; or, if intended to be planted out in beds, the sooner it is done the better. If there be any shoots of choice sorts that you are desirous of propagating, and that can be spared without spoiling the appearance of the plant, they may be struck very easily under a bell glass, and in any of the slight hot beds that may be at work; not that heat is necessary, but that it hastens the striking, and, therefore, for choice things is better than waiting for the ordinary method, otherwise they will strike in the cold frame. It must be recollected that, in all cases where bell glasses are used, the inside should be wiped dry every morning, and the compost kept moist, but not wet.

Ranunculuses, after planting, should be covered slightly with litter, to prevent the frost penetrating the ground to the tubers; and if any of them are not yet planted, they should be got in without a moment's delay, as directed last month. In very mild weather, they will frequently be above ground before the end of March, and there is additional reason then for covering; but, in all cases, the litter should be removed in warm genial weather, to let the beds have all the advantage of sunshine; it will be unsafe, however, to leave them uncovered of a night after they are once in the ground, until the middle of May.

Anemones, and especially the double ones, which are tender compared with the single, should be treated in the same way as Ranunculuses.

Tulips.—These, on coming through the ground, generally crack the surface all over the bed, for the rains will have closed the compost at the top, until the spikes break it. The whole of the surface should be stirred, and any lumps bruised, so that it may be laid pretty even: it is of the greatest benefit to the bulbs to give them air, and of infinite service to the stems to lay the soil pretty close to them. In some kinds of loam, from the swelling of the bulb, and the progress of the spike through the earth, it will be actually cracked, so as to almost show the bulb, which would thus be exposed to all the vicissitudes of the weather, and the attacks of insects, which could not find their way through crumbled earth, laying close, though lightly on the bulb and round the stem. If any vacancies occur where the plant has not come up while the main quantity has, it will be necessary to search carefully for the cause. Sometimes a stone, or a hard lump of dirt, will have turned the spike downwards or sideways for a considerable distance, and thus thrown it behind; besides which, it may so far impede its progress, as to throw it a long way out of its place, before it can grow up at all. The removal, in time, will relieve it, so as to make the delay of small consequence. It may be, however, that the plant is affected; the outer leaf may have begun to rot, or, as is sometimes the case, may have so completely closed over the other, as to prevent its growth, and even cause it, if neglected, to decay, instead of grow. The decayed part must, in such cases, be entirely removed with a sharp knife, and the plant be laid bare down to the bulb. It should then be covered a few days with a bell glass, and as it progresses, the hole filled up with fresh loam, for by no means ought the same to be returned to the place, and all the portions of the rotted leaf or leaves should be thrown away from the bed. The covering of nights, and not uncovering even in the day if there be frost, must be always observed. Should the weather be mild towards the end of the month, and there be refreshing warm rains, it will be of service to let the tulips have them; but be doubly careful that the frost does not reach them afterwards, or there will be mischief. It has been preached by the old florists, that tulips should not be watered; this is perfectly erroneous; it is true, they do not want much, but look at the strength the foliage acquires by a warm shower, and then ask yourself why, in the absence of rain for any continuance, water should not be beneficial. It is all a mistaken notion, and arises from this fact—the roots will go down after moisture, and the foliage will therefore never, or at least rarely, flag, even in a long drought; but the foliage requires moisture as much as the root, and though it would matter but little whether a drop of rain ever reached the roots from above, or a drop of water ever went below the surface, the foliage ought not to go without moisture. There is no plant in the botanical world that derives more benefit from a gentle shower than the Tulip; and when, as is often the case, it can get none for a considerable period, none derives more benefit from a gentle watering all over the foliage, but not in such quantity as to penetrate the earth much, for that is immaterial. It should, however, be soft river or pond water, or rain water, that is used; and though it may seem trifling, if, on plunging a thermometer into it, there appears many degrees difference in the heat, a little warm water to raise the temperature to that of the air, or a trifle above it, will be of infinite service.

Carnations and Piccotees.—Make up your stock of these as early in the month as you please; because, having been got well over the worst of the winter, there is no danger of their coming to harm; and it is no use giving orders after the best have been selected by other persons, and some of the favourite sorts sold out altogether. It is vexing to find in another's stand of flowers, one or two brilliant ones which you might have had if you had liked; and which, perhaps, make the exact point that throws you down two or three in a show. If there are any of the following that you have not got, get them if you can; not that they are all sure to give you fine show blooms, for they are, like all other flowers, uncertain; but they are all capable of producing splendid show flowers, and when one fails, another does not: the sorts are,

CARNATIONS.

Scarlet Bizars.

- Twitchet's Don John
- Headley's Achilles
- Strong's Duke of York
- Colcut's Brutus
- Rainforth's Game Boy
- Smith's Duke of Wellington
- Martin's Splendid
- Lodge's True Briton
- Roi de Capuchins
- Bucknell's Earl Fitzhardinge
- Ely's Lord Pollington
- Sharpe's Defiance
- Elliott's Duke of Sutherland
- Fletcher's Duke of Devonshire
- Hale's Prince Albert
- Appleby's Prince of Wales

Crimson or Pink and Purple Bizars.

- Ely's Lord Milton
- Ely's Duke of Bedford
- Mansley's Robert Burns
- Sealy's Princess Royal
- Puxly's Prince Albert
- Wakefield's Paul Pry
- Barnard's Duke of Roxburgh
- Ely's Hugo Meynell
- Chambers's Kate
- Holmes's Count Pauline
- Strong's Linnæus
- Cartwright's Rainbow
- Jaques's Georgiana
- Venables's Spitfire

Purple Flakes.

- Ely's John Wright
- Ely's Mango
- Mansley's Beauty of Woodhouse
- Mansley's Bonny Bess
- Nix's Lady Chetwynd
- Milwood's Premier
- Martin's President
- Wilmer's Solander
- Christian's Excellent
- Strong's Esther
- Pollard's First-rate
- Brabbin's Squire Meynel
- Prince de Nassau
- Turner's Princess Charlotte

Scarlet Flakes.

- Simpson's Marquis of Granby
- Twitchet's Queen of Scarlets
- Chadwick's Brilliant
- Bucknell's Ulysses
- Wig's Earl of Leicester
- Brown's Bishop of Gloucester
- Ely's North Midland
- Mitchel's Patriot
- Jones's Brilliant
- Wilmer's Hero of Middlesex
- Greasley's Mary-Anne
- Wilson's William IV.
- Addenbroke's Lydia
- Holdham's Defiance

Rose Flakes.

- Brook's Flora Garland
- Ely's Lady Ely
- Ely's Lovely Anne
- Greasley's Village Maid
- Hyan's Queen Victoria
- Askwith's Miss Walker
- Tomlin's Brestes
- Iron's Defiance
- Wood's Rosabelle
- Wilson's Harriett
- Barranger's Apollo
- Fletcher's Duchess of Devonshire
- Lowe's Marchioness of Westminster
- Elliot's Duchess of Sutherland
- Hufton's Rosea

PICCOTEES.

Red Edge.

- Barraud's Cornelius
- Sharpe's Duke of Wellington
- Sharpe's Gem
- Sharpe's Red Rover
- Wildman's Isabella
- Headley's Sarah
- Brinklow's Rising Sun
- Sharpe's Countess de Grey
- Gidden's Princess Royal
- Kirkland's Duke of Wellington
- Sharpe's Hector
- Brinklow's Masterpiece
- Jessop's Sir W. Middleton
- Burrow's Mrs. Bevan

Purple Edge.

- Headley's Nannette
- Brinklow's Pre-Perfection
- Brinklow's Lady Chesterfield
- Dickson's Trip to Cambridge
- Giddin's Vespasian
- Ely's Field Marshal
- Ely's Mrs. Fenton
- Ely's Favorite
- Kirkland's Princess Augusta of Cambridge
- John's Prince Albert
- Barraud's Coriolanus
- Mansley's Nulli Secundus
- Sharpe's Invincible
- Sharpe's Agitator
- Wilmer's Prince Royal

Rose and Scarlet Edge.

- Barnard's Mrs. Barnard
- Barraud's Bride
- Green's Queen Victoria
- Kirkland's Mrs. Annesley
- Twitchet's Fair Rosamond
- Wilson's Miss Fanny Irby
- Wain's Queen Victoria
- Dickson's Bride
- Garratt's Lady Dacre
- Wilmer's Princess Royal*

They will now require the most strict attention; they must not yet be watered more than is absolutely necessary for their actual preservation; for the fact of the soil being wet, will not only endanger them from damp, but they are far more susceptible of frost; and, when attacked by frost, the fibres are more susceptible of damage; besides which the fibres are now growing fast, and are therefore young and soft.

Alterations, planting shrubs, making box edgings, (which, with all their faults, are the neatest, brightest, and, for any but slovenly gardeners, the best of all edgings,) and removing plants of any sort, should be completed forthwith; there is more risk this month than there was last, and will be more next month than now: not that all may not be done safely at much later periods than they are done; but that it is better to do all things as soon as they can be well done.

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* Glenny's Almanac.

UNDER GLASS.

Plants which are being forced in common hot-beds, pits, or stoves, require much water as they advance to bloom; and all plants growing fast, whether in stoves or other buildings, should be carefully watched, that they be not injured for want of nourishment, as they rapidly absorb moisture. It is impossible to be too careful in respect to watering plants under glass. All general directions are sure to be wrong for two-thirds of the plants; the only safe way is to examine each for itself. While plants are at rest, very little moisture is sufficient; when they are growing, or flowers advancing, they must be well supplied; but even then they require examining before they are watered: it is as bad to give it them before they want it sometimes, as it is to keep them too long without it. As the flowering parts are coming into bloom, they should be removed into a cooler place, that they may be longer opening, and also that the flowers, when open, may be longer in perfection. Other plants may be placed in the forcing-house, or pit, or hot-bed, to succeed those put in last, and the supply must be apportioned to the demand. These remarks apply generally to the place selected for forcing, which may be a different contrivance in every garden; some may use common garden lights and dung beds; others a warmed pit; others again a tan bed: these remarks apply to all, and should be well attended to, if success is to be secured.

THE STOVE AND ORCHIDEOUS HOUSE.

The plants which have been at rest will now require starting. Many bulbous-rooted kinds, such as all the family of Amaryllidea, if the pots be filled with roots, may be shifted into those of a size larger. Bulbs of Gesnera, if not yet shifted, or (if preserved out of ground) potted, should be attended to at once; so also should the bulbs of Tropeolum, and all the bulbous tribe; but it is not the time to be chosen—last month was better. Nevertheless, the directions apply to bulbs imported or newly procured, rather than those in collections; for it is better to let all such subjects rest in their pots, and when they start of themselves is the time to supply them well with their requirements; mostly they want room—fresh compost to work in—and watering. Stove climbers must be trained and directed the way they are to go. If there be any more shoots than are required, take away some to give strength to others. Orchideous plants will require syringing frequently, and the house, generally, must be kept moist. Plants which are being grown fast, for specimens, must have their shifts, and may be plunged in the tan; but a plant may be grown too fast for its beauty. The rapid growth always makes thinner foliage; therefore, some are better for moderation. Plants, however, like Russellia Juncea, where there are no leaves to care about, cannot be grown too fast: some of the Cacti are of this nature also. Euphorbia Splendens and Jaquiniflora may, for they both look better for compactness, and the proportion of bloom to the size of the plant is always greater when the growth is moderate. The glass may average between 60 and 70 at night, and between 70 and 85 by day.

CONSERVATORY AND GREEN-HOUSE.

Light fires in damp weather, and give air at top of the house, to dry the place. Let this be done in the morning, and continued all day; apportioning the opening at the top to the temperature, which the ventilation should prevent from being materially raised, the object being to dry the house, and not to raise the heat. In watering, waste as little as possible, as the frequent necessity of closing the house against frost, makes the damp the principal enemy to be feared, and slopping quantities of water about unnecessarily increases the evil. Train climbing plants on their trellises as they grow, that the face of them may be always fair; and if any are of a form to require a face all round, the plant must be turned to the light daily. Stir the surface of the soil in all the pots that have indicated damp and moss: examine the drainage of any that appear more moist than others, and see that all is clear, for the wet would soon destroy a plant. Many of the hard-wooded plants will begin to swell their bloom-buds, and must have constant attention paid to the degree of moisture in their compost, for they must not have too much; and what they have should be soft, pure, and rather of a higher than a lower temperature than the house. There is great good or evil administered in watering plants. Keep the house, as well as the plants, clear of dead leaves, and all the crevices and corners should be well brushed out, to clear the places of insects. Now is the time when the gardeners' enemies begin to appear in great numbers; and there is nothing like beginning in time to extirpate them. If the green fly appear, fumigate the house with tobacco smoke, and syringe afterwards with clear water.

KITCHEN GARDEN.

Potatoes.—Begin your planting, if you have not before commenced. This may be done many ways, and all of them right. For the first or earliest out-of-door planting look to last month's directions. There is a very successful way, however, that is all but forcing them;—dig a trench a foot deep; put hot stable dung in it, and tread it down, which will compress it into half the compass; let the trench be filled in that compressed state all but three inches, which may be filled in with the soil. On this soil lay whole sets of any early kind, whichever any honest seedsman may recommend for your locality; let them be a foot apart in the rows, and the rows two feet six inches apart: now take the soil from between the rows, well bruised, so as to have no lumps, and cover up the sets four inches, forming a bank; cover these over with peas haulm, sufficiently thick to keep in heat and keep off wind and frost, without shutting out light and air. When these come through, keep earthing them up and covering them during frost and wind, but uncovering them in the sunshine and warm rains. If the weather be very dry, you must water, but this is not very likely. They will yield you a pretty and an early crop. Plant ash-leaved kidneys and other early sorts in the ordinary way, towards the end of the month, for any quantity you may be likely to want. They will not come up before they will bear the weather; and when they do come, if they are too early, it is easy to cover them up with soil for a while, and let them come through that also. Those who are fond of forcing, may plant a few whole sets in a slight hot-bed, giving air in fine weather as soon as they are up, and carefully covering them at night. They will, of course, come earlier than those in the open ground.

Jerusalem Artichokes may be planted in rows much in the same way as potatoes, except that, being a straggling, tall subject, the situation chosen is mostly out of the way of other things, under the north or east side of hedges or fences, or any place where they form a blind. They should have the ground well prepared with dung; have whole sets, about the size of walnuts with the coats on, placed at two feet distance, and be allowed to stand for three seasons without removing. Indeed, many only remove every other one, as they require the tubers for use, and return the small ones and ugly ones to the ground, and having gone all through the plantation, taking every other one, come back to the first again, and then take up the others. The return of the small ones and ugly ones secures a new stock, as it were; and as the demand is seldom very great, the plantation is never materially altered in appearance. If these things be planted in more than one row, the rows should be three feet apart.

Asparagus Beds.—The great object in preparing ground for this dainty vegetable is to have great heat and richness. Sound, strong, but friable loam, forming the top spit of a meadow, renders the rotted turf of such field the best of all soils. The beds should be trenched two feet deep, and filled with this compost, or as much of it mixed with the ordinary compost as can be got. By making the beds three feet wide, and the alleys three feet six wide, you will be able to plant two rows in each bed, and they will be found ample. The part intended for the bed should be dug two feet deep, and the stuff thrown out. Six inches of turf at the bottom, and six inches of ordinary stuff next, and so on, until the two feet is full, will make a good preparation. After this has been together awhile, take out a few barrowsful at one end, and chop all through it, so as to mix it well, and when done, lay six inches of decayed dung the width of the beds, and put three inches of the top spit mentioned at first upon it; then lay a row of the two-year old roots (which may be bought at any nursery) a foot apart, and nine inches from the edge, and then another row nine inches from the other edge, and in zigzag fashion; that is, just opposite the openings between the other plants, thus:

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There will be eighteen inches between the rows, which gives each nine inches to spread before they reach each other, and also the same before they reach the edge of the bed. In laying these roots on the flat surface, the fingers of the roots must be spread out, and ordinary soil from the alleys between the beds should be laid on a good three inches above the crowns. The alleys are to be dug out for all the rest of the raising, and where these vegetables are got for market, the soil above the crowns must be raised at least six inches, because the public look for a long blanched stem, but for domestic use the asparagus is far better without it. Again, for market the buds are scarcely above ground before they are cut, and the eatable portion is very small; whereas for domestic use, it is better to allow the shoot to make two good inches of green stem above ground, for there is not only thrice as much to eat, but that which is eaten is thrice as good in flavour and tenderness. Established asparagus beds require to be forked over and top-dressed with dung, and the soil thrown on them out of the alleys to the thickness required. We should be content to have three inches of soil over the crowns, and to cut all the buds just one inch below the surface, when they had reached exactly four inches above it.

Carrots.—Sow after well digging, trenching, and pulverizing the ground. The thinner the seeds are sown on the surface the better, and they should be well raked in. As the seed of carrots are always woolly and hang together, they should be rubbed and mixed well with sand or dry mould, to separate the particles, otherwise they would be sown and come up in tufts, instead of evenly.

PARSNIPS and BEETROOT require the same management, except that the seed is not so troublesome to separate, and greater distance may be allowed. Parsnips and Beetroot will bear planting out, so that if ground be scarce at the time, they may be sown in patches; but it is perhaps the best way to sow a breadth, and take plants up to thin it afterwards, instead of hoeing all of them out.

CABBAGE.—The strongest plants from the seed-bed, or from hot-beds, when they have been pricked out, may be planted out eighteen inches apart in the row, and the rows two feet apart, there to remain for cabbaging. Sow more seed, and whatever may be the difference in subjects for market, the dwarf kinds come always best to table for families. Earth up any that were planted last month or before, that have not been already earthed up; that is to say, draw earth up round about their stems, and choose dry weather for it.

HORSE RADISH.—If no provision has been yet made for a supply of this, attend to last month's directions before it is too late; it is now quite late enough.

CAULIFLOWER.—Those under hand glasses may be allowed all the air they can have in fine mild weather, but they must be protected in frost. As the glasses are by this time almost everywhere obliged to be propped up on the whole four sides, some litter should be laid round the bottom, where the vacancy is between the glass and the ground, but they should not be propped while the plants will allow of their being on the ground. When there are more than the glass will properly accommodate, the weakest or least promising should be taken up, and be planted out under other glasses, or in a sheltered place in the open air. However, this belongs rather to last month than this; and if neglected, should be done without delay. Where any of the flowers begin to show, one or two of the leaves should be broken down upon them, to prevent the sun reaching them, as it would discolour the heads.

SPINACH.—Sow the round leaf kind on a good open space, in drills or broad-cast, as the case may be; if in drills, a foot apart is not too wide, and they cannot be too thin on the drills, as they must be afterwards thinned to six inches apart, either by hoeing out small, or by drawing out when they have got larger, so as to be useful to cook; for the smaller they are the better they eat, if properly cleaned of their grit. This method makes a dish or two by the operation of thinning out, though many fancy it retards the principal crop. The winter kinds are still furnishing a supply, and require to be kept clean from weeds, and the larger leaves only to be picked for use.

PEAS and BEANS.—Continue to sow according to previous directions, and earth up those advancing. If you have been fortunate with former crops, and they are standing well, sow but few, because your supply will be gradual and successive; but if the earlier crops have failed, sow the more on this occasion. But where you sow periodically through the season, you must never overdo the quantity, because it wastes ground as well as seed. Stick any of the peas that are high enough, for independent of other matters, it is a great protection.

CELERY.—Sow in a warm situation, either to continue a supply of plants, or for the main first crop. Protect the plants as they come up with litter of some kind. It is still better if you can appropriate a cold frame, a declining hot-bed, or a hand glass to it.

BROCCOLI.—Sow all the early kinds, especially the Cape.

RADISHES.—Sow in the open borders, to cover with litter, and if you have any up, see that they are covered from time to time against frost.

WINTER GREEN, such as Kale of various kinds, may be sown for the principal crop. The variegated Kale is excellent for eating, and handsome as a crop. Savoys also are among the most useful, and should be sown: towards the middle of the month will be the best time.

KIDNEY BEANS.—A few of these should be sown in drills, eighteen inches from each other, and the Beans must be thinned out to a foot apart in the rows.

CHILIES, TOMATOES, and CAPSICUMS, must be sown in heat; a pot of each put into the hot-bed used for anything else will do at first; as they grow they have to be picked out, two in a pot, and continued in heat until the end of May, when they are otherwise disposed of.

NASTURTIUMS, where they are used, may be sown in pots; three in a small pot, to grow until they can be turned out; some may be sown where they are to remain, but those in pots will be in fruit soon after they are turned out into the border.

SALADS, comprising Lettuce, Corn Salad, Mustard, Rape, Cress, Salad Radish, &c., may be sown; to be covered with glass, or protected with litter. The most sheltered place should be chosen.

ARTICHOKES.—The suckers should be taken off and planted out, the earth strewed round the established plants, a rich top dressing be applied, and the earth will draw up to their stems. Very few persons now eat them, but they are a good-looking crop, and a piece is not amiss in a large garden.

Cardoons.—The same treatment, but as the stems of their leaves are eaten after blanching like Sea Kale, they are earthed up almost as much as Celery as fast as they advance.

Onions.—Select a good open spot, well dig it, and richly manure it; you can hardly do this too much; level and sow with your principal crop of White Spanish, Globe, and Tripoli, about even of each; rake it in well, and heavily roll it, or tread every inch of it all over, to press the seed into the soil; cover well by raking.

Leeks.—Sow a patch of these somewhere to transplant.

Look to past months, to see if anything has been neglected, and do it now upon the principle that it is better late than never.

FRUIT GARDEN.

This is later than we should choose to plant trees; but not later than we should do it if required. It requires, however, greater care in the taking up and removing, as well as in the planting, to prevent the trees from suffering by the change. The entire root ought to be preserved, and the moisture upon it should not be permitted to dry. It is impossible to be too careful of every fibre; and in planting, the root should be spread as nearly as may be into the shape it occupied when in the place it was taken from. Take especial care to plant high enough, the collar of the root well above ground, for on this much depends. If there be a tap root, cut it off, and make a corresponding sacrifice of the head, so that the diminished root may have diminished work to do; on no other occasion would we wilfully lose an inch of the root, but a tap root is ruin to a fruit tree nine times out of ten. In the modes of planting refer to former directions.

Grafting is one of the operations to be looked to this month, if not actually performed; but we prefer working them towards the end of the month, or, at all events, commencing. Of the various modes of grafting, a volume might be written; but we see no object in going out of the most simple possible way. Imagine a stick broken, and that you have to splice it in the strongest way; you would then make a good graft. Say that the stock and the scion to be grafted on it are both of a size; cut each in a sloping direction, and make them fit exactly; then cut a slit in each half way along the slope, so as to form a kind of tuck into one another. This is technically called tonguing; it adds to the strength of the graft, and makes the union complete. When the stock is larger than the scion, the best way is to cut a sort of cleft out of the stock, taking out an angular piece, and then to cut the scion to fit in it, this being tied in and the barks brought into contact, for the barks must always meet at one of the edges to make a proper union. Another mode of grafting, in a simple way, is to cut out of the stock a piece the shape of a wedge, and the scion should be cut the form of a wedge to fit it. Others reverse this operation, particularly when the scion is small, and the stock large. Cut the stock the form of a wedge, and the scion is split, and the inside cut away, so that it bestrides the wedge at one side; for if the barks of the stock and scion meet at one side it is enough, although the stock was as large as your arm, and the scion a mere twig. In the course of time the scion would be quite as large as the stock, and perhaps hardly show the join.

The principal points to attend to in the process of grafting is, first,—whatever be the plan,—to use sharp knives, make the joints fit close, tie them firmly, but not too hard, let the barks of the scion and stock always be close on one side, whatever be the state of the other, for on that depends everything; cover the graft where tied with proper grafting clay, which is introduced to keep the air from the join until it is united. This grafting clay is made adhesive by mixing, according to its stiffness, with a quantity of new cow-dung, beating them together, for if it were not tempered with the cow-dung it would bake hard on the trees, and crack, and fall off in dry weather. Some use grafting wax, formed of resin and bees' wax, in equal parts, and tempered with tallow, a small portion of which will reduce it so as to be laid on while warm with a brush, and cool sufficiently to coat over the join properly, as a body to resist the wet and the air. But upon the whole the clay is preferable, as it retains moisture. One particular point should always be attended to in grafting. The stock should, at its highest point, have a bud, because nothing is more common than stocks dying down to the first joint; so that a graft would, in such case, be lost, because if the stock died back to the first eye, and the graft was above it, however well it may be done, it must fail; whereas, the eye or joint being at the very top of the stock secures it.

Pruning should be done with; but if not completed there is no time to lose. The directions for this have already been ample, and it should be now considered as work delayed, and be done accordingly.

Gooseberries and Currants.—Procure all you are in want of at once, for the delay now would be of importance. There must in these, as in other fruit, be additional care used in taking up as well as planting.

Fruit Trees planted last month should be examined to see that they have not been disturbed, and they must be set to rights.

Vines should be looked to, and nailed fast to walls, and if any pruning has been neglected no time must be lost.

Wall-fruit Trees are by many persons protected by bunting or matting, but of late the transparent cloth, which does not exclude light, has the advantage of both. We, however, do not care to protect them at all. We have fancied many times that there is as much harm as good.

Look well to last month's directions, and do whatever is undone.

THE FLOWERS AND PLANTS OF SCRIPTURE.*

The perusal of a work entitled a Scripture Herbal, by Maria Calcot, has so charmed us, that with twenty reserved points on which we differ from the authoress, we have to thank her for a volume of instruction; and while we regret she is no more, we admit that the fact of her producing such a book during a period of sickness, and so shortly before her death, attaches to the work an interest which we cannot describe. There is an air of charity, a halo of honesty, a voice of piety in every page. The very introduction is an acknowledgment of the obligations under which the author feels she labours, so different to all other persons in her situation, that many must blush at the rebuke it carries with it to those who appropriate without such plain avowals: there is an apparent dread of taking credit for anything belonging to another. Among a long catalogue of thanks to different individuals, and acknowledgments to books, the writer expresses her gratitude to Robert Brown, Esq., for his advice and assistance in procuring her the use of the Hicrobotanicum of Celsius, and in a note, almost prophetic, she says:—"It may seem vain-glorious thus publicly to boast of the friendship of this great botanist, who, by the universal voice of the naturalists on the continent of Europe, has received the title of Princeps Botanicorum, a title hitherto bestowed only on Linnæus. But I shall soon be beyond the power of expressing gratitude in this world, and I am willing, with what breath I have, to thank him, and to express a regard that has lasted long and can only end with life. His friend, Mr. Bennet, has also done much for me, and must receive my thanks here for all his trouble." The entire Introduction, indeed, is a series of favourable notices of individuals who have aided the study of Scripture botany, travellers as well as authors, and of acknowledgments of assistance derived from their exertions and works in the completion of the present volume. The work is illustrated with a number of freely sketched and well-executed portraits of plants, and the author has carried her modest refusal to wear honours not strictly belonging to her to the extent of acknowledging the source of every engraving; some she had copied from works, every one of which is named, others from nature, as she observes in one of the passages of the Introduction:—"I must now say something of the wood-cuts which head the descriptions of the plants; the collecting the figures and drawing them on the wood blocks, as it was a work of labour, so it was a labour of love. The authorities whence they are taken will be found in the Index to the cuts; and the great solace I have derived from the drawing of them, confined as I am to a sick-bed, makes up for whatever pain there might be in acknowledging that the faults are entirely my own, since my lines were most carefully and accurately followed, &c." Thus we observe, that throughout the work there is nothing appropriated without full credit being given to the source whence it was derived, a kind of honesty rather scarce in authors. The work comprises, as will be anticipated, a catalogue of all the plants mentioned in the Holy Scriptures; nearly all the descriptions, with appropriate remarks on the texts which allude to them, are preceded by an engraving of some portion of the plant: they are, for the most part, very accurate. There is, of course, some speculation, some conjecture, some disputation, but all offered with a modesty not common in authors. Indeed, all writers upon the subject are lavish of their opinions, and seem to fancy, and a silly fancy it is, that they show their learning and research by speculative contradictions, and occasional inventions: many mistake their quality altogether. They are exercising cunning, not showing sound acquirements; there is a display of ingenuity rather than knowledge. However, we will quote portions of our author's remarks on a familiar subject, and one frequently met with in both Old and New Testament:—

"Among the fruits brought by the Israelite spies to their brethren in the Desert, to prove the goodness of the promised land, were Figs. Yet the very next time they are mentioned, it is by the rebellious people, who murmured against Moses for bringing them to the Desert, which 'is no land of Figs.'

"In Deuteronomy, Moses introduces the Fig, when enumerating the riches of their new home, in his farewell exhortation to the people whom he had so long led and governed; and, throughout the Bible, the Fig is generally named as a mark of fruitfulness. In the admirable fable of Jotham, the Fig-tree is made to say, 'Shall I leave my sweetness and my good fruit?'

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* A Scripture Herbal. By Maria Calcott. London: Longman and Co. 1842.

"Both the texts quoted from Samuel relate to the economical value of the Fig. In the first book of Kings, it is the sign of the prosperous reign of Solomon, that every man dwelt safely under his vine and under his Fig-tree; and in the second book, Sennacherib, King of Assyria, uses the same metaphor to seduce the Israelites from their allegiance to Hezekiah.

"The Psalmist, enumerating the miseries of Egypt, when Pharaoh would not let the children of Israel go, says, 'He smote their Fig-trees, and brake the trees of their coasts:' the loss of the Figs, which, along with bread, are the chief food of the labourers during some months of the year, being a national calamity of the most cruel kind, though little considered in our cold climate, where fruit, green or dry, is consumed as a luxury, not a necessary of life. . . . .

"Throughout the book of Jeremiah, the Fig is used as an emblem of good or evil; and the twenty-fourth chapter is entirely filled with the vision of the good and bad Figs.

"The books of the minor prophets are full of allusions to the Fig-tree in the same sense. The passage in Habakkuk relating in part to the Fig-tree is so fine, that I will conclude the notices of the Fig in the Old Testament with it.

"'Although the Fig-tree shall not bud, neither shall fruit be in the vines; the labour of the olive shall fail, and the fields shall yield no meat; the flock shall be cut off from the fold, and there shall be no herd in the stalls; yet I will rejoice in the Lord, I will joy in the God of my salvation.'

"The Evangelists record that Christ himself used the Fig-tree in his discourses, as an emblem of goodness. 'Do men gather Figs of thistles?' he asks, in order to enforce the necessity of purity of heart to produce good actions. And in St. Luke we find the parable of the hitherto barren Fig-tree, which the master of the vineyard would have destroyed; but the mediator entreated him to spare it, till it should have been dressed and pruned, and time had been given to show whether it might not yet bear fruit. Such is the merciful intercession of Christ for us!

"The destruction of the barren Fig-tree, related by St. Matthew, forms a sequel to this. The tree, dressed and pruned, put forth green leaves, and appeared fair and promising to the passer by. But when the hungry wayfarer approached, the deceit was laid bare. No sweetness, no good fruit was there; and the tree, the emblem of the hypocrite, was blasted by the word of the Lord!

"This excellent and nutritious fruit grows naturally on all the shores and islands of the Mediterranean, where it has been cultivated from the very earliest times, spreading southwards to Upper Egypt and Nubia, and to Arabia and Persia eastward.

"The Fig-tree requires care and culture in order to bring its fruit to perfection, and to increase its quantity. The prophet Joel, describing the mischievous acts of an invading enemy, says, 'He hath barked my Fig-trees;' as if the killing of the Figs was an injury like that of burning the corn.

"The ancient and singular art of cultivating the garden Fig is described at some length by Pliny, and in our time it has been detailed curiously by that eminent botanist Tournefort. It is on seeing such deviations as the Fig-tree presents from the common course of nature, that we are most apt to exclaim, 'Lord! how wonderful are thy works! in wisdom hast thou made them all!' And yet the annual growth of the commonest blade of grass, with its curious structure fitted to preserve its kind, is not less indicative of the power, wisdom, and goodness of the Creator, than the fructification of the Fig, or the blossoming of the aloe; hence, therefore, 'God never wrought a miracle to convince atheism, because his ordinary works convince it.'

"Besides the great use of dried Figs as an article of common food in the East, they are used medicinally. Boiled in milk or barley water, they are recommended for coughs and pains in the chest. When heated and split, they are applied to boils and imposthumes with success; a practice as old as the age of Isaiah, who cured King Hezekiah of a dangerous boil by laying on it a lump of Figs.

"The whole plant abounds in a milky juice, sufficiently viscous to have been used by painters as a vehicle for laying on colour, before the use of oil-painting became general.

"The Fig thrives well in England. It was brought hither in the time of Henry VIII., who had a French priest for his gardener. The fine Fig-trees at Lambeth are said to have been planted by Cardinal Pole. Our fruit is exceedingly good, but the seed does not ripen thoroughly, so that our young trees are always raised from layers or cuttings.

"The Fig-tree loves to grow by a well or fountain. The most delicious figs I ever ate were from a tree in the Campagna of Rome, whose roots had penetrated far into an ancient aqueduct: and I can never forget the charming shade afforded by a Fig-tree planted by some Spanish visiter, close by a rill of pure water, on the Island of Juan Fernandez; where many a recollection of Europe, and those who dwelt there, arose at the sight of that tree, to pain yet comfort the wanderers of the ocean; for,

> 'There is mercy in every place;
> And mercy, encouraging thought,
> Lends even affliction a grace,
> And reconciles man to his lot.'"

Pp. 140—146.

Here there is little room for speculation. In the article Cedar there is much interest, particularly as there are some remarks on the decline of the number on Mount Lebanon, partly from time, and partly, indeed chiefly, from the destructive hands of man. It would appear, there are hardly a score left. In another article, the Holm of Scripture is said to be our Turkish oak. The author says—

"I was for some time doubtful what tree is the Holm of our version of the Bible. But I find that Gerard gives that name to the rough-acorned oak, which some call Turkish oak now-a-days; and that Dr. Phineas Holland, in his translation of Pliny's Natural History, says decidedly, b. xxiv. c. 4, that the Great Holm Oak is the Quercus Cerris; and, in b. xvi. c. 6, he says of the fruit of the Quercus Cerris, 'clad it is with a cup beset with sharp prickles;' which answers, not only to Gerard's description and cut, but to the specimen brought to me by a countryman as the Holm Oak, and which I have drawn from the branch itself.

"Now, as our authorized version was published very little after Holland's translation and the Great Herbal, it seems next to certain that, in our version of the story of Susannah, the word rendered Holm is really the Quercus Cerris. It is a native of Asia Minor, Syria, Palestine, the hilly parts of Persia, and onwards to Cabool, if not beyond; therefore it might well be one of the ornaments of Susannah's garden, where it would find few rivals in the stateliness of its growth, or the beauty of its foliage."—Pp. 204, 205.

The article Ivy is interesting, though only once mentioned in Scripture. The Lily, as may be supposed, occupies a conspicuous place. We have the figure of Lilium Candidum, or ordinary garden White Lily, to precede; and the author says—

"This most lovely flower is a native of Palestine, where it adorns the valleys with its beauty, and perfumes them with its fragrance. Indeed, the land itself has sometimes been called Phaselida, because it so abounded in lilies.

"We read in the books of Kings and of Chronicles, that the artists who decorated Solomon's temple chose the lily for the capitals of the pillars; and, moreover, that the great cistern, or molten sea, had its edges wrought like the brim of a cup, with flowers of lilies—a due homage paid to the loveliness of the queen of the valleys of Palestine.

"The Lily of Solomon's Song, in those passages in the second chapter, 'I am the rose of Sharon, and the lily of the valleys,' and 'As the lily among thorns, so is my beloved,' should be translated jonquil, according to Sprengel, after the most ancient Chaldee and Arabic versions; and, as the jonquil, narcissus, and others of the Lily family, abound in Palestine, it is not surprising that the poet king should have varied the sweets to which he compared his beloved."—Pp. 244, 245.

Why it should have been translated jonquil we do not know, nor are we informed, except that Sprengel said so; but we have a second figure, Narcissus Calathinus, to which is appended the name of "Solomon's Lily." This is somewhat speculative. If the author gives the Lilium Candidum as her own version of Solomon's Lily, and the Narcissus Calathinus as Sprengel's, we can understand it. Of course there are many texts quoted—for, like the fig, the lily is frequently mentioned—but after many others, the author says: "But all these poetical passages in the Old Testament shrink into nothing before the exquisite simile in the Sermon on the Mount, where Jesus says, '*Consider the lilies of the field, how they grow: they toil not, neither do they spin: and yet I say unto you, that even Solomon, in all his glory, was not arrayed like one of these.*' At the moment of speaking, the Saviour was seated on Mount Tabor, which is still a flowery hill; and looking over fertile plains to sheltered valleys, where the lily springs up at every step; so that his hearers had only to look on either hand to the beautiful and stately flower, and behold its purity of colour and delicacy of texture, far exceeding all human workmanship, even for a monarch's wear. When such is the fitness, the propriety of the simile divinely spoken in that place, I can scarcely comprehend the anxiety to displace the reading of the Testament, and substitute every and any thing for the lily of Palestine." In all this our author favours the adoption of the Narcissus Calathinus, as the Lily of Solomon, and seems, in another passage, to be half angry with others for disputing it; and she says, in conclusion, "Salt's Scarlet Amaryllis, from Abyssinia, Le Vaillant's Giant Lily, from the desert of Africa, nay, even the fetid Crown Imperial, have, in turns, been proposed; but each and all ought surely to be rejected in favour of the true White Lily of Palestine." The Rev. Mr. Cunningham, when once rebuking the cavillers who found texts in the Scriptures which they could not quite understand, and fixed upon them as difficulties which they wanted reconciled, said, "Why should we pick thorns when we are mercifully permitted to gather flowers?" And so we say, when we find people trying to set us to rights on any unimportant matters. For our own parts, we think it almost presumptuous to question whether this or that, or the other lily was meant by our Saviour, when common sense tells us that the allusion was general. Christ did not say, Consider the lily of the field, but "the lilies of the field;" and what does this convey but that, if there were a thousand species of lilies in flower around them, they were all included. On what authority—by what perversion of language, any one flower should be supposed to be fixed on, we know not. "Consider the LILIES of the field, how THEY grow: THEY toil not, neither do they spin." The comprehensive language of the Saviour was not likely to be limited to a single species; nor does it in the least detract from the supposition that He comprised all the kinds of lily familiar to the people: that He says afterwards, "And yet I say unto you, that even Solomon, in all his glory, was not arrayed like ONE of these." For, had He said, "Consider the thousands of beautiful lilies of the field," it would not be so comprehensive as the more simple sentence, which comprised all, if there were millions—"Consider the LILIES of the field." However, while we make up our mind that the lilies spoken of by our Saviour meant every kind of flower that was called a lily, we leave others the singular task of settling which particular flower they will fix the plural on.

Solomon's lily, however, may be, after all, a distinct kind, however unimportant it may be what kind it was; for it is called severally, the lily of the valley, and the lily that groweth by the waters, which may be considered synonymous; and therefore we have a right to presume it was one of the many Liliaceous flowers which grew on marshy ground. But with regard to the lilies of the field, they would comprise all the most delicate and most gaudy, the most beautiful and fragrant, that carpeted the regions known to the multitude.

Kitto, in his notes to the Pictorial Bible, falls into what we consider the same error as his predecessors, and has his mind fixed on the singular. He says, "The Syriac translators seem to have considered, with modern versions, that the lily of Solomon and the lily of Matthew were identical, for which conclusion, indeed, this authority is scarcely needed. What kind of lily is intended no one can tell; but concluding that it was a lily, the Amaryllis Lutea offers a fair alternative. We know that this flower abounds in Palestine, and the gorgeous displays of the green vales, embroidered with a profusion of the yellow Amaryllis, at a time when most other flowers have faded, was well calculated to furnish the subject of an allusion to the spontaneous bounty of God."

Now there happens, according to our notions, to be no one circumstance to favour the identity of the two flowers,—not even the name. We give the translators all the benefit of being able to render the word Flower instead of Lily, for that would help us, were it admitted. We have already shown that Solomon alludes to the lily of the valley, and the lily that groweth by the waters; while our Saviour, whose language throughout the Sermon on the Mount is dignified and comprehensive, speaks of the lilies of the field, (and if it could be rendered flowers it would be hardly more comprehensive, as the lily, in its many forms and colours, no doubt composed the greater part of the flora of that country,) evidently alluding to the beauties of a whole tribe. Kitto, indeed, in a note to the Song of Solomon, upon the subject of the lily noticed there, says, "The Hebrew word *Shoshanna* seems to indicate that the Lily of the Valley was one of those plants wherein the number six predominates in the distribution of their parts; such as the Crocus, Asphodel, Daffodil, Lily, &c." Here, then, he has a choice of flowers on which to fix the royal preference, and concludes that the king must mean the Amaryllis Lutea. Now, if there be one lily more ugly, more common, more scentless than another, (blooming, too, only at a period when nobody would care even to mention things in the open air,) the Amaryllis Lutea is that flower. It is only like a large coarse crocus, not so good a yellow, and, moreover, does not grow in valleys, nor by the waters. But we are apt to consider the Scriptural texts in too limited a sense; the lilies of the Old Testament are widely different from one another; because, while Solomon speaks of the lily of the valley, and which groweth by the waters, Esdras, speaking of the restored house of Jacob, writes (among things prepared for them) of "seven mighty mountains, whereupon there grow roses and lilies, whereby I will fill my children with joy;" and the wise son of Sirach compares the praises of the good to "the sweet smell of lilies, to the lilies by the waters." In short, the lilies formed a very prominent portion of the flora of those parts and those days; and, as the sweet smell of lilies is alluded to, we have a right to suppose that the low, common, scentless Amaryllis Lutea was as far from the thoughts of those who mention the lily at all as it is removed from the more beautiful and fragrant lilies of the field, which bespangled the great expanse of vegetation in the Eastern world. Besides, if it be true that the six-petalled flowers were meant by the original Hebrew, and now translated as lily, then the whole tribe of Amaryllidea would come in with as much propriety as the little common Amaryllis Lutea. Upon the whole, therefore, we think it presumptuous to assert that the various texts allude to the same lily, when, as we have shown, distinct habits are attributed to them; still more so to assume that the alleged single lily of the Old Testament should be identified with the "lilies of the field" mentioned by our Saviour on the Mount as more glorious than Solomon; and, worse than all, to fix upon an insignificant scentless species of Amaryllis as the one so favoured.

We could give a long catalogue of the flowers claimed by different writers as the lily of Solomon, and all as unlike each other as may be; but Solomon's lily of the valley, and growing by the waters, and Esdras's lily of the mountains, and Christ's lilies of the field, have no analogy whatever, except that our Saviour comprises the whole tribe; and although we admire the author's first choice, the Lilium Candidum, before all others, and blame her for abandoning it for Sprengel's Narcissus Calathinus, which she appears to do, yet we maintain that our Saviour's words justify us in concluding that he comprised every flower that was known to his hearers by the name of Lily. We have been blaming people for discussing matters of no importance, and yet have fallen chin deep into the same error. However, we will give one more extract from the work, and we have done:—

"The Spikenard of the Scriptures, and of the Greek and Roman writers, had long been forgotten as a living plant, if indeed it was ever known excepting as an Indian drug, until our own days.

"Clusius first figured the dried Spikenard of the shops, and the figure was copied by Gerard in his Herbal. This cut so exactly corresponds with the description given of the Spikenard by the Arabian and Indian writers on medicine, as to afford a strong presumption that the drug described, and the figure given, belong to one and the same plant. The appearance of the drug is compared to a bundle of the tails of ermines, but not so dark in colour; and such, it appears, is the figure.

"When Sir William Jones went to India, he was naturally anxious to promote whatever science and whatever learning could throw light on that interesting, and then comparatively unknown, country. The books of the ancient classical writers were full of references to Indian odours, and spices, and drugs: but what trees produced them, and what plants or roots might contribute to their number or efficacy, were questions to which few plausible, and fewer true, answers could be returned.

"One of the first botanical inquiries of Sir William was concerning the Spikenard of the ancients. From both Hindoo and Mussulman physicians, he received descriptions agreeing remarkably with the figure of Clusius; and was told that in the Indian bazaars it was commonly sold by the name of Jatamansi, which means a lock of hair, to which the dried Spikenard has a stronger resemblance than even to a bundle of ermines' tails. Sir William applied his philological skill in tracing the various names of Spikenard through the Greek, Arabian, Persian, Sanscrit, and several vernacular dialects, so as to satisfy himself and others that Spikenard and Jatamansi were one. In consequence of his conviction, he published the following opinion in the Asiatic Researches, vol. iv. p. 117.

"'I am persuaded that the true Nard is a species of valerian produced in the most remote and hilly parts of India, such as Nepal, Morang, and Butan, near which Ptolemy fixes its native soil. The commercial agents of the Deva Rajah call it also Pampi; and by their account the dried specimens, which look like the tails of ermines, *rise from the ground resembling ears of green wheat, both in form and colour;* a fact which perfectly accounts for the names, *Stachys*, *Spica*, *Sumbul*, and *Khushah*, which the Greeks, Romans, Arabs, and Persians have given to the drug, though it is not properly a *spike*, and not merely a *root*, but the *whole plant*, which the natives gather for sale, before the radical leaves, of which the fibres only remain after a few months, have unfolded themselves from the base of the stem.'

"The question now arose as to what the Jatamansi could be, and what part of India produced it, as it certainly was not brought to the market from any part of the country at that time under the dominion of the British.

"Taking Dioscorides for his guide, Sir William caused inquiries to be made in the neighbourhood of Butan, and accordingly found that great quantities of the Jatamansi were imported from that country, that the native government was so sensible of its importance that it did not allow any plant of it to be carried out of its boundaries without especial permission from the Maharaja, and that it grew in a mountainous district. After some delay, and incurring considerable expense, the chief of Butan permitted several baskets of roots to be sent to Calcutta; but they died by the way, nothing remaining but the little spikes like ermines' tails, which resembled the drugs of the shops. Some plants, however, believed to be the same, had been procured and saved by Mr. Burt, English resident at Gayà; and he made a drawing, and sent it with a description to Sir William, which showed that it was a valerian; not the same with the valerian known in Europe as Nardus Celtica, but of the same family.

"The drawing was engraved to accompany Sir W. Jones's dissertation on the Spikenard of the ancients, in the second volume of the Asiatic Researches; and copied and embellished from a description by Haynes in his Arzney Gewächse.

"It might have been objected that the scent of the valerians is in general not very agreeable, and therefore the rich perfume whose fragrance filled the whole house could not proceed from one of these: but, in the first place, we cannot judge of what perfumes were most agreeable to the ancients; and, in the second place, the odour of the Spikenard is nowhere said to have been used alone. It was certainly, among the ancients, used as the modern Hindoos use it, mingled with fragrant oils and spices, 'according to the art of the apothecary;' and those of Laodicea and of Tarsus had the reputation of making the best. All the spices of the Eastern isles, the oils of reeds and grass, those of santal and of lign aloes, made part of the precious compound which was sold in boxes of onyx and of alabaster.

"When Horace invites Virgil to a feast, he tells him his share of the contribution is to be the perfume, while he gives the wine:

'Thy little box of Spikenard shall produce
A mighty cask that in the cellar lies.'

And such, as I shall by and by show, had been the use of the Spikenard in Judea from remote antiquity.

"It is curious that an ointment into which Spikenard enters, should be still used in Upper Egypt and Abyssinia to anoint the face and preserve the skin from the effects of the burning sun; and it is still more curious, that, when Hasselquist travelled in Egypt, he found that the Venetian merchants annually brought sixty tons of Celtic Spikenard, which is certainly a valerian, to Cairo, where the Nubians and Abyssinians bought it at the great price of one hundred rix-dollars a ton, because the Indian Spikenard was so scarce as to be hardly procurable.

"It happened, by a curious coincidence, that just at the time when Sir William Jones had thus supposed he had traced the true Spikenard to its native country, and published his account of the Valerian Jatamansi, that the late Sir Gilbert Blane imagined he had found in it a very different plant, which had been sent him by his brother from Lucknow, and of which he gave specimens to Sir Joseph Banks. On examination, it proved to be a grass of the genus Andropogon, differing, however, from any before described. Thus Linnæus's conjecture, that the Spikenard is a grass, appeared to be confirmed.

"The manner in which Mr. Blane discovered this grass is worthy of notice. In 1786 he was out on a hunting expedition with the Nabob Vizier of Lucknow, when one day the air became suddenly perfumed with a most agreeable odour. On inquiry, he found that it proceeded from the grass which the elephants were bruising under foot; upon which he immediately collected some of the plants, and set part in his garden at Lucknow, and part he sent to his brother in England. This adventure of Mr. Blane's resembled closely a story related by Arrian, in his account of the march of Alexander to India. He says that, when the Macedonian army was passing through Gedrosia near the Indus, the air was perfumed by the Spikenard trodden under foot by the soldiers, and that the Phœnicians who accompanied the expedition collected large quantities of it to carry to their own country as merchandise. The fact of Mr. Blane's discovery of the scented Andropogon, and the story from Arrian, formed the subject of a paper read before the Royal Society; and, by most persons, the Andropogon Nardus Indica was at the time received as the Spikenard of the ancients.

"The paper was sent by Blane to Sir W. Jones, who read it, as he says, with great pleasure, but without conviction; and he easily overturned whatever evidence might be supposed to be afforded by Arrian, showing that that author was little trustworthy, especially in matters concerning natural history, as he asserted that cinnamon, myrrh, and other spices and gums, all grew abundantly in Arabia, where it is certain they never could have been found. Sir William's essay, in the fourth volume of the Asiatic Researches, also shows that the geography of Arrian will not tally with Mr. Blane's discovery; and proves pretty clearly that the Andropogon in question cannot be the true Spikenard.

"He goes on then, with as much good sense as learning, to show that the Valeriana Jatamansi of Butan had the best claim to the venerable name of Spikenard. And this was one of the last botanical essays that accomplished gentleman and Christian scholar lived to write.

"Dr. Roxburgh, in the same volume of the Researches, makes some valuable remarks, and gives a scientific description of the plant. Time, however, and the advance made by the English in the North of India, showed that, either by accident or design, proceeding from the commercial jealousy of the government of Butan, a wrong species of the plant had been received by Mr. Burn at Gayà: but Dr. Wallich was fortunate enough to find the true

Jatamansi growing in the mountains of the northern provinces; and his and Dr. Roxburgh's descriptions were received in Europe as belonging to the true Spikenard of the ancients, and De Candolle named it Nardostachys Jatamansi.

"But in the year 1830 the claims of the Andropogon of Blane were revived; and an elegant paper, drawn up by Charles Hatchett, Esq., and read before the Royal Society, after recapitulating Mr. Blane's discovery of the plant, and the historical proofs from Arrian, gives the following account of what he believes to be an unanswerable confirmation of the opinion originally entertained by Sir Gilbert Blane, that his brother had really discovered the ancient Spikenard.

"Mr. Swinton, of Swinton, who had been thirty years resident in India, had passed some of that time in Malwa, where, being attacked by acute rheumatism, after suffering a great deal, he was persuaded by some of the native chiefs to try as a remedy the *rhoonsee ka tiel*, or oil of grass. Having experienced great benefit from it applied as an embrocation, he sent some to Dr. (afterwards Sir William) Russell, at Calcutta, who recommended it with good success to several patients.

"Mr. Swinton learned that the oil had been prepared time immemorial in and around Malwa, the method being kept profoundly secret, though it is certain that it is obtained from the spike of the grass.

"The Parsees appear at one time to have enjoyed a monopoly of this oil; but it is now in the hands of the Mahommedan Borahs, who sell a small quantity at a very high price to the chiefs, and the rest to the Arab merchants, who carry it westward, where the greater part finds its way to the Turks and Egyptians, and a small portion to the Arabs of the Desert, who have a high opinion of its virtues.

"But, though this account of the *rhoonsee ka tiel*, when added to Sir Gilbert Blane's former statement, might form a strong presumption of the probability that the Andropogon was the Spikenard, there was no proof of its being so; and, moreover, there was much that told against it, although Linnæus, gathering the fragments of ancient description, had expressed his belief that the Spikenard was a grass. In the first place, the description of the drug Spikenard, like a bundle of ermines' tails, was inapplicable. Then the constant assertion that Spikenard came from the far East, the custom of the Nubians and Abyssinians, kept up without interruption, of compounding their ointment of Spikenard with a valerian of inferior quality as the best substitute for the true Spikenard, are almost proofs that a grass growing to the west of India, and the like of which is to be found in Arabia and in many parts of Syria, instead of being brought from the Gangetic provinces, is not the ancient Spikenard.

"The number and variety of the grasses yielding fragrant oil, precious medicine, and admirable as perfumes, in both the continent and islands of India, is very great; and they are probably not all perfectly known yet, notwithstanding the zealous search of modern botanists. One, at least, of these oils is called Nardin; and it appears that the word, or rather syllable, *nard*, in the name of a plant, implies sweet-scented, in some of the old southern dialects of India, and also in Persian.

"Among these I have already mentioned that Dr. Royle believes he has found the Calamus Aromaticus of the ancients, the *Kaneh bosem*, or sweet cane of Scripture, which Clusius sought for so diligently, but in vain.

"But it is time to return to the Jatamansi, which certainly is the drug sold for the Spikenard, and described by the Greek, Arabian, and Hindoo physicians.

"Dr. Royle, finding that a quantity of the root was brought down from the mountains, year by year, procured several pounds of it newly dug, at the end of the rainy season, at Nagul, a village five miles from Deyra, and one of the commercial store places at the foot of the mountains. These he planted in two different botanic gardens belonging to government, where they germinated; and he has figured them in his elegant work on the natural history, particularly the botany, of the Himalaya Mountains. This shows that the plant is identical with that of which a drawing was sent home by Dr. Wallich, and which was published by Lambert, and described in the Flora of Nepal by Don.

"Having, as I trust, given a faithful account of what is now known of the Spikenard, I must consider it as belonging to my Scripture Herbal. But, first, I may mention that our old English herbalists had, in different parts of the kingdom, given the name of Ploughman's Spikenard to a Baccharis and to a Conyza. The latter, indeed, still retains the name. It is remarkable for the agreeable perfume, resembling cinnamon, given out by its root in burning; and is, no doubt, the Nard that Ben Jonson alludes to in his beautiful song:

> 'Have you smelt the bud of the briar,
> Or the Nard in the fire?'

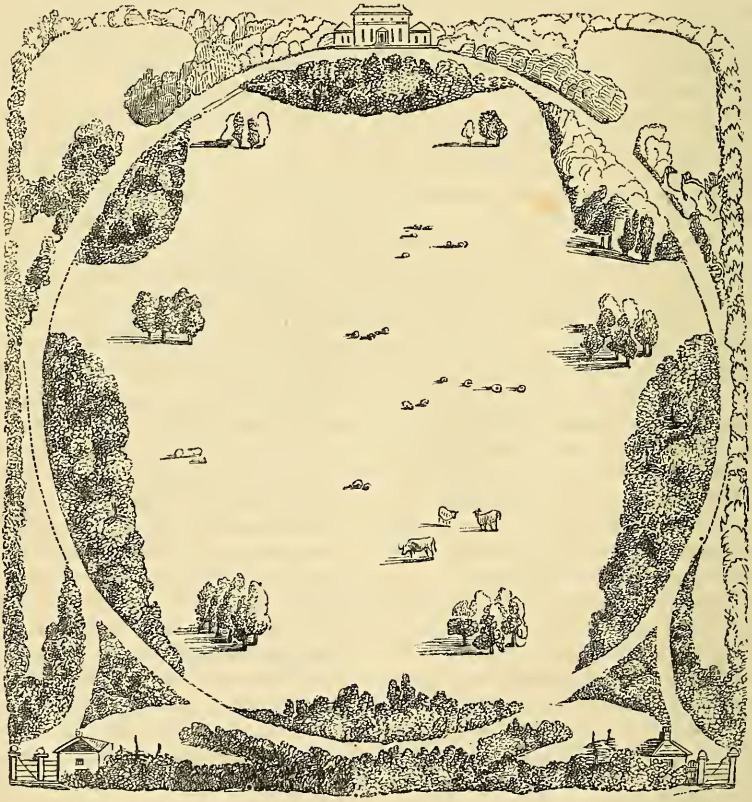
"The use of perfumes at the feasts of the ancients was by no means confined to what we look upon as the classical ancients, who, in all probability, borrowed it from their Eastern neighbours, whose descendants continue the practice; and with them, in Nubia, Ethiopia, and Arabia, the real Spikenard is used as a perfume, and in various medicinal unguents; but always with other fragrant substances, the scent and power of which it is thought to increase, and, as a valerian, to have a salutary effect on the nerves. I have already noticed that these precious medicinal unguents were kept in boxes of alabaster or onyx by the ancients; and one of these it was that the pious woman in the gospel brought to Jesus's feet.

" How precious this ointment of Spikenard was in Jewry, and on what occasions it was used in most ancient days, we are taught by Solomon, who says: 'While the king sitteth at his table, my Spikenard sendeth forth the smell thereof.'

" Mary, therefore, as at a royal feast, took the alabaster box of Spikenard, very precious, and brake it, and poured it upon Jesus's feet. 'She anointed his feet, and wiped them with her hair, and the house was filled with the odour of the ointment.'

" One hypocrite was present, the betrayer of the innocent person. He exclaimed against the waste of the precious ointment, saying the price might have been given to the poor. But Jesus defended the pious act; and promised that, 'wheresoever this gospel shall be preached throughout the whole world, this also that she hath done shall be spoken of for a memorial of her.' "—Pp. 447—461.

This last quotation will convince our readers that the author has supplied her work from a mind well stored with natural history, with the sacred writings, and with the useful part of botany. We highly recommend it, and may refer to it again.



LANDSCAPE GARDENING.

APPROACHES TO THE MANSION.

Landscape Gardening consists in the imitation of natural scenery, and the excellence of the art is in bringing as many of the beautiful features of natural scenery into the space allotted for the operation as can be got together consistently with the proper effect to be preserved. In a large space there is no difficulty in all this if a man knows his profession; but when the space is limited the nicety consists in a choice selection of the principal features, and not attempting too many. The ordinary features of a Landscape consist of roads, clumps of trees, shrubs, flowers, rivers, rocks, waterfalls, and even natural fountains. Vast advantages must present themselves before all these can be attempted with success; but some of them may be adopted in very limited space; thus, the roads or paths, the trees, shrubs, and flowers must be produced, for this is the lowest grade of Landscape Gardening; and the proper distribution of these may be considered the first step in the art. If we can make ourselves understood in this matter we may consider it the first lesson in Landscape Gardening. As nature suggests her roads by various means, they are rarely if ever straight; in swampy places the higher ground forms the roads; in woods, openings among the trees suggest the direction of them; and in mountainous districts both assist in suggesting them; for comfort would suggest the propriety of climbing as little as possible, and would make us choose the lowest practicable ground, while water would keep us from taking the lowest. These, with the obstacles which the wood occasionally throws in the way, would force many deviations; and if we are compelled to get to the top of a hill that is steep, we should naturally walk round it, or partly round it, so as to ease the ascent. All these things should be kept in mind in laying out a garden, and the reason for deviating from the nearest cut to any object we wish to reach, must be made obvious, or sufficiently so to reconcile ordinary minds to it, or at least, to prevent any glaring impropriety. For instance, say that from the entrance to the mansion is a dead level, and nothing impedes the view of it the first moment: common sense would teach us to make the shortest cut, for a sweep of road would do violence to the most common of animal instincts, that of accomplishing a purpose with the least possible labour:—the schoolboy would wonder how people could be so stupid as to go such a roundabout way when they might go as straight as a line. What is the first business then of the Landscape Gardener? Why, to prevent any such conclusion being drawn, he must place obstacles at the entrance; he must prevent people from making this short cut. If you wish the road to go in one direction, let a plantation of shrubs be the obstacle to any other; and although this would not do to reach all round the road, yet other clumps may be so placed as that nobody would be tempted to deviate from the road. The occasional view of the mansion, as the road sweeps round, should be transient, and this is all to be effected by judicious planting. The clumps, as we approach the house, should be upon a smaller scale than those at a distance; the shrubs and trees more choice, and the evergreens more abundant; and regard should, also, be had to the introduction of flowers. Much has been said and written about the impropriety of cultivating flowers in shrubberies; but in what this impropriety consists; what rule or law of nature it violates; or what is the objection beyond the mere whimsical notions of the writers, we are at a loss to conjecture. The present object, however, is not to defend flowers, nor to go into the details of the art; we are simply making a road which is not straight, though there was no justifiable reason for winding it, and we are creating the obstacles as we go on that we may please our fancy in a sweeping road. Clumps, therefore, of varied forms and extents, are rising on the inner side of our road to prevent any one from being tempted to cut across the grass, and specimens are being placed here and there to prevent any body from fancying he could save ground by cutting across, even from one point to another. With regard to the direction of the road, the gardener must be guided by his own taste; there should not be an abrupt turn or elbow the whole distance. An easy sweep at every part must be secured, and supposing that the ground is a dead level, without any feature to cause a particular course, the road may be carried tolerably near to the outside. The object of this is to show as much space as possible, and the more that can be kept inside the road the more will it appear. Let us take a square piece of ground for our purpose, as it is the most formal, and let us suppose it to be smaller than we wish. The main road should be in some parts within twenty or thirty feet of the boundary, but in others it may be further off. This road might form an irregular circle, the inner side of it planted with occasional clumps, and specimens, to place the house in or out of sight, and the outer side occasionally planted with a complete bank of trees and shrubs for some distance, and then an opening which shows a much further extent of ground, and this should be where the corner of the square ground admits of it. Thus, the opening being at the part where the utmost extent can be shown, there is no idea given that in some parts the road is at the extent of the ground; the impression created on the mind is, that there is the same extent all round that we see in the corners. But in such a spot as we have described we have only the commonest stage of Landscape Gardening, simply trees, shrubs, flowers, and a road, made as long as it well can be made, to favour the idea of extent. The accompanying sketch, however rough and uncouth, illustrates what we would convey as to the principle: much, however, in the same way as pothooks and hangers (as the urchins at school say) and straight strokes, give the rudiments of letters. That is to say, the square and the circle, and the supposed plantation belt and clumps, serve to show the rudiments of Landscape Gardening,—not because a circle is a common thing in nature, for it is as scarce as a straight line; but that all bends ought to be segments of circles, and ought to be reconciled by the application of something to justify them. In this sketch, indeed, there is a uniformity and a formality not required, nor looked for, and only rarely tolerated in Landscape Gardening; but all parts of the circle exhibit a lesson: go where you will you cannot cross to the house so conveniently as you can go along the road; without appearing to do so you see the extent of the ground all over, and although you have the worst possible plot of ground,—a square flat piece, not supposed to be large enough for your purpose,—you make it appear larger than it really is by merely showing the space at the corners to the best advantage. It is not always, however, necessary to study the extent; there may be all that can be wanted, without the necessity of sacrificing anything, yet practice is most useful under difficulties, and some rules cannot be too early nor too deeply inculcated. Among these the following:—No road or path should be straight; no turn in a road or path should be given without an object, and the object should be manifest in some interruption, such as a clump, a tree, a mound, a dry hollow, a building, or water, and that some one or other of these interruptions should be produced if there be none already. That plantations near the boundary should in places be as low as the fence itself, that the surrounding scenery may be appropriated as it were; that is, that it may be made to appear a match for the work you are upon, and thus extend the view as far as possible where the objects are desirable in a Landscape. These rules apply in all cases from the smallest to the largest concerns; but the taste of the Landscape Gardener is called as much into requisition when there are all the advantages of the Landscape, as when he has to make the best of a plain surface; for he has to mind that he carries forward his road in such a way as that he may appropriate all the advantages the ground affords him. He must here turn out of his way to traverse the margin of a lake, and there to go round a plantation of trees, and somewhere else clear a mound or hollow, and there is the difficulty of avoiding ugly bends in the road and an awkward approach; these are the difficulties to overcome. In the hands of a skilful gardener, the advantages are made use of to the full extent, for all great features must be made use of as part of the whole design, or be removed altogether, involving frequently very large expenses. By making use of them they become great beauties, and that which would be an eyesore as it is, may be so adapted to the rest of the scene, or the rest of the scene be so adapted to that, as to become a real ornament. In the Royal Botanical Society, Regent's Park, there is a mixture of the Landscape and the Artificial Garden, which, we think, sadly inappropriate. There is a straight broad walk across the whole space, well adapted for a parade, and as such it is used. It was the preservation of this and some other features which, being a condition in all the designs, destroyed every one of them, and the plan now adopted is not a jot better than one half the designs sent in for the premium of fifty guineas. It was impossible to form a good Landscape Garden under the condition imposed, and the mixture, though difficult in all the plans, and bad in all, could never have been made good. It would have been much easier to have formed it altogether of narrow and straight walks, and fountains, with beds geometrically laid out, for then it would have been all of a piece, and complete in its design; nevertheless, there are bits of Landscape very nicely managed, and the mound and lake are among the prettiest features of this kind. We dislike mixtures of style generally; there is hardly an exception to our aversions wherever we have seen them; except, indeed, when independent of the general features, and in some isolated and almost planted out nook we find a Dutch flower-garden, well kept and spread out like a carpet at our feet; but it must be independent, or it is offensive. To return, however, to our first lesson, the very commencement must be made by removing all that you do not mean to use,—trees, hedges, buildings, hills and holes not intended to be saved, must be removed or converted to a plain flat surface, by removing the trees, hedges, and buildings, filling up the hollows with the stuff from the rising ground; and to be done as it should be done, the turf where it is good should be carefully out before the levelling is commenced, and be laid aside for use. The road must be first marked out with pegs, such as may be seen at some distance, and in this all the beauty of the Landscape consists. The drive must be made pleasant and agreeable, of an easy turn in every part, due regard being had to other roads leading from it to the stables and offices; this is best done by a single row of pegs in the middle of the intended road, and the measure being taken on each side according to the width required. Walk along this row of pegs, examining them all close to you and at a distance from you, to see if there be any sharp turn, and removing the pegs to adjust anything that may be wrong until you are satisfied with the form of your line, and then fill up the row of pegs by putting others between them, so that they shall not be more than three feet apart; presuming that the place is properly levelled and rolled, take the turfs that were cut before you levelled, and with a rod as long as half the width of the intended road, measuring from the centre row of pegs, lay down your turf, regulating it as you go on, making the edge next the pegs perfectly in keeping with them, and very smooth; the outer side having all the irregularity of the widths of the turfs, the inner edge being made fair. Care should be taken that the rods in measuring be exactly in a line across the line of pegs, for a little slope one way or the other would make inches difference in the width of the road; probably many would prefer to make the first row of pegs they put in, do for one side of the road, and measure for the other side with a rod the length of the intended breadth. It matters but little which way it is done; we prefer the centre for beginners, because by attempting to mark out one side of the road the operator, if not used to it, would find he had miscalculated the effect where the width of the road was added all on one side. The road once marked, and verges of turf down, the pegs may be removed, and according to the means you have of filling it up, so ought you to have the road excavated. If you have gravel sufficient on the estate, take away the top spit that you remove of the soil to lay in a heap for compost. The road ought to be one foot thick of gravel (or dry rubbish with gravel at the top) on the side, and eighteen inches in the middle, being taken out rather deeper in the middle, and the top being made higher; but many roads are made only half this thickness, and where the land is drained well, if there be no use for the top spit of soil, it may be spread abroad on the surface on each side; but it is infinitely better to remove it, if possible, as such stuff is always valuable. The turf may be all laid down again as soon as you have pegged out the clumps and borders, which are to be planted, and which, of course, are not to be covered; and where you are short of turf, what you have, should be used nearest to the verges, and the ground being levelled up to the remainder, the space may be sown with the proper grass seed, and left to turf itself. The road once properly made, and the clumps, or at least the leading ones, left properly marked, the worst part is got over, and if we had taken a young man round with us, and made him perform the work under our directions, this would have been no indifferent first lesson in Landscape Gardening.

HARDY EVERGREENS.

We are so wedded to the plan of gardening which makes a place look as well at Christmas as at Midsummer, that we enter upon the subject of Evergreens with more than ordinary pleasure. There is a charming freshness about them; for they have, for the most part, glossy leaves, which few deciduous plants have, and are altogether superior to most in growth and appearance. The Evergreens are also more varied in figure, colour, and foliage, than all the ordinary and available deciduous plants for a garden and shrubbery. Suppose, for instance, we commence with

THE HOLLY.

In this tribe alone there is sufficient difference to form an agreeable and beautiful clump; for, among the numerous varieties in the foliage alone, we have light, and dark green, narrow and broad leaves, very smooth and very prickly, variegated edges and variegated centres, yellow variegations and white variegations; in short, it is almost incredible the number of real distinctions that are to be found in this very beautiful tribe. The number of hardy kinds regularly recognised is very great, amounting to more than thirty; among these there are the following:—

Ilex Aquifolium; tree; British.
I. A. albo marginatum; shrub; British.
I. A. aureo marginatum; shrub; British.
I. A. crassifolium; shrub; British.
I. A. ferox; tree; British.
I. A. flavum; shrub; British.
I. A. heterophyllum; tree; British.
I. A. medio pictum; shrub; British.
I. A. recurvum; tree; British.
I. A. alta-clarense; tree; British.
I. A. angustifolium; tree; British.
I. A. aurea pictum; tree; British.
I. A. ciliatum; tree; British.
I. A. ciliatum minus; tree; British.
I. A. crispum; tree; British.
I. A. ferox argentium; tree; British.
I. A. ferox aureum; tree; British.
I. A. fructo albo; tree; British.
I. A. fructo nigro; tree; British.
I. A. latifolium; tree; British.
I. A. laurifolium; tree; British.
I. A. marginatum; tree; British.
I. A. senescens; tree; British.
I. A. serratifolium; tree; British.
I. Balearica; tree; from Minorca, 1815.
I. Canariensis; tree; from the Canaries, 1820.
I. Cassine; tree; from Carolina, 1700.
I. Dahoon; shrub; from Carolina, 1726.
I. Laxiflora; tree; from Carolina, 1811.
I. Opaca; tree; from Carolina, 1744.
I. Recurva; tree; origin not known.
I. Vomitoria; tree; from the Floridas.

Besides these, and other hardy kinds, there are stove, green-house, and frame species, with which, however, we do not meddle for the present, our object being with such only as will thrive out of doors. The best mode of procuring the varieties most proper for display, is to go to nurseries and choose them, because the grand object is to procure them of the sizes and figures best adapted for the purposes required, and of the varieties best adapted for contrast. There is, perhaps, no Evergreen which presents so great a choice, hence the Holly should be depended on as a main subject for the general outline and for conspicuous situations. The more strikingly fine varieties should be in the foreground, or be placed as single specimens. The tree kinds should be for the middles of clumps or the backs of borders, diversifying the figures, colours, and heights, so as to produce at proper distances agreeable effects. The bloom of the Holly is not valued; it is, indeed, insignificant, but the fruit or berries are rich coral or bright lemon colour, and form a beautiful contrast to the foliage. The Holly, too, bears the knife as well as any shrub in cultivation, and is frequently clipped into fantastic forms, an unworthy and child-like proceeding, and only mentioned to show the capacity of the plant to bear pruning. It should always have enough of the knife to prevent its growing thin and lanky, and out of a handsome tree or shrub form, but not enough to make it formal. Such is the variety of the Holly, that a shrubbery with nothing else in it could be made very imposing, though there are too many handsome Evergreens to render this necessary. The greatest contrast that can be produced by the side of the Holly is, perhaps, the Yew and the Pinus, the foliage of these being contrary in every particular: and the latter, the Pinus tribe, affords another wonderful diversity of foliage and figure among themselves. There are nearly one hundred species and varieties together, besides nearly thirty under the section Abies, and a dozen under the section Picea. But, as in other large families, many of these are too much alike to use by way of contrast, though some are remarkably showy and distinct, and well deserve places in the most choice arboretums and shrubberies; and there are many valuable new ones recently introduced, which are hardly common yet among the nurseries.

THE PINUS TRIBE.

The Pinus tribe is so singular, and so utterly beyond all management by pruning, that attention must be paid to its ultimate growth, when we are choosing the varieties for planting. Many of them have very strong characteristics, which contrast finely; and in mixing shrubs for effect, they form a rich and elegant ornamental variety. Some of them are light and delicate in appearance; others are finely clothed with close long foliage, forming a round feather on every branch; others throw their branches out flat and fan-like. Some hang pendulous, some grow upright, but all are beautiful; and all trees; none of them form shrubs. They grow naturally with one trunk, which, if not damaged, continues straight; the branches uniform all round it, from the bottom to the top, and forming a beautiful pyramid, acute or otherwise, according to the sort, and utterly incapable of being formed into a shrub. To enumerate the many varieties would be to perplex the reader, who, with a hundred names before him, not one in ten of which he ever heard before, would be puzzled for a choice. Nothing in the least degree connected with plantations so much requires the choice to be made from growing specimens; for if any one could give the proper attention to the various importations from all parts of the world, many, with different names given by botanists as well as importers, would be found identical. If very few varieties are wanted, the Spruce Fir, the Scotch Fir, the Weymouth Pine, Pinus Cembra, all of which are very cheap, will be found good enough for moderate places; and the Larch Fir, with which, by the by, we have no business here, as it is deciduous, forms, when in leaf, a most beautiful contrast. However, there are few nurseries which have not a good choice of this tribe, if they pretend to grow Evergreens at all; and the best way is, to go and choose them for their habit, form, colour, size, or other peculiarities; remembering that they are tall trees before they have done growing; and that, if not spoiled, and if cultivated in good ground, they maintain their forms to the last; except, indeed, that the lower branches, like those of all other trees almost, will decay first. Therefore must we, in choosing, look especially to this; and at the time of planting, take care that we do not place them where they will hide other subjects by their advancing growth. If Hollies are, then, capable of almost forming a beautiful evergreen garden by their own almost endless varieties, what may not be done by Hollies and the Pinus tribe combined, when probably, to say the very least, twenty very distinct Hollies, and twice as many very distinct Pines, may be selected? The fruit of the Pinus tribe forms no inconsiderable addition to the appearance of a good selection. They are not only of very different forms, but they are also differently disposed on the trees; and, as many of them bear fruit in abundance, at the height of six or seven feet, they may in some cases be selected for their fruit rather than their foliage, though the latter is in no case other than handsome. Some of the most remarkable of the Pinus tribe are—

Pinus Australis, or *Palustris*, from North America, 1730.

P. Cembra (and varieties), from Siberia, 1746.

P. Coulteri, from California, 1832.

P. Devoniana, from Mexico, 1839.
P. Excelsa, from Nepaul, 1823.
P. Halepensis, from the Levant, 1683.
P. Hartwegii, from Mexico, 1839.
P. Lambertiana, from North America, 1827.
P. Laricio, from Corsica, 1814.
P. Banksianæ, from Hudson's Bay, 1785.
P. Llaveana, from Mexico, 1830.
P. Pallasiana, from Siberia, 1820.
P. Pinaster (and varieties), from the south of Europe, 1596.
P. Russelliana, from Mexico, 1839.
P. Sabiniana, from California, 1832.
P. Strobus (and varieties), from E. America, 1705.
P. Sylvestris (and varieties) Scotland.

And among the section now called Abies, the most prominent are—

Abies, or *Abies Excelsa*, from the north of Europe, 1548.
A. Alba, from North America, 1700.
A. Canadensis, from North America, 1736.
A. Cephalonica, from Cephalonia, 1824.
A. Douglasii, from North America, 1826.
A. Menziesii, from California, 1831.
A. Nigra, from North America, 1700.
A. Orientalis, from the Levant, 1825.
A. Rubra, from North America, 1755.
A. Smitheana, from Kamaon, 1818.

Among the section denominated Picea, there are several worthy of notice; but some of these, as well as of Abies, have been known under other names; one of the best being, however—

Picea Webbeana, or *Pinus Spectabilis*, from Nepaul, 1822.

There are those who would delight in forming collections of this fine family of plants, and placing them as specimens. Such would be apt to procure all, because the ambition of some leads to the attempt to possess numbers rather than quality. In shrubberies, it is desirable to have none that are at all like each other; and indeed arboretums are much more interesting when some discretion and taste are exercised in a selection, instead of grasping at the number of varieties that can be formed; the varieties often being so insignificant as to baffle all attempts on the part of the uninitiated to discover in what the difference consists.

THE ARBUTUS.

The next tribe of Evergreens to which we shall draw the attention of our readers, will be the Arbutus, a most beautiful shrub, bearing fruit like an oval strawberry, and flowers in bunches of the form of round bottles. A noble-growing shrub, and of which, though there are many varieties, we should not select more than half-a-dozen, even if we wished to grow all the better sorts. Arbutus Unedo, indigenous in Ireland, both the white and the scarlet (as it is called, but in reality pink); Arbutus Procera, from North America; and Arbutus Andrachne, from the Levant; these are handsome as well as distinct. There are others whose foliage differs in some respects, but they must be seen to be chosen; for in these selections something is to be left to taste. These, when they get into good soil which suits them, grow fast, and become trees if so pruned, or may be continued bushes if preferred; in the one case they are stopped; in the other, the side lower branches are pruned off, to work the growth into the head; but they are most handsome as a shrub. These form a pretty diversity both in the style of their growth, and in their singular foliage; but beyond, they have strong claims in the appearance of their beautiful fruit, which, when the shrub attains a bearing maturity, have an imposing appearance, especially Unedo and its varieties, which are in perfection of bloom in October, and fruit in the succeeding months of the winter.

THE RHODODENDRON.

We come now to a superb tribe of blooming Evergreens, the Rhododendron. The hardy kinds of this superb plant imported from North America, are—

Rhododendron Albiflorum, white, June; introduced 1835.
R. Catawbiense, purple, July; introduced 1809.
R. Catesbæi, purple, May; introduced 1810.
R. Maximum, pink, July; introduced 1756.
R. Maximum album, white, June; doubtful.
R. Punctatum, pink, July; introduced 1786.
R. Punctatum majus, pink, July; introduced 1786.
R. Purpureum, purple, July; tree.

These by no means form a collection, nor do they comprise even the more striking characteristics of the shrub; but as Rhododendrons are called Americans, we have given the list, that it may be seen America is far less distinguished for Rhododendrons than many persons imagine. Among the sorts which other countries claim the credit of supplying, may be mentioned—

Rhododendron Arboreum cinnamomeum, purple, June; Nepaul, 1820.
R. A. niveum, white, March; tree; Nepaul, 1817.
R. A. roseum, rose, April; tree; Nepaul, 1817.
R. A. sanguineum, scarlet, April; tree; Nepaul, 1817.

R. Barbatum, hardly known; shrub; Nepaul, 1829.

R. Camtschaticum, purple; shrub; Kamtschatka, 1802.

R. Caucasicum, purple, August; shrub; Caucasus, 1803.

R. Chamæcistus, pale purple, May; shrub; Austria, 1786.

R. Chrysanthum, or *R. Officinale*, yellow, June; shrub; Siberia, 1796.

R. Dauricum, purple, March; shrub; Siberia, 1780.

R. D. atrovirens, purple, March; shrub.

R. Farreræ, lilac, March; shrub; China, 1829.

R. Ferrugineum, scarlet, June; shrub; Switzerland, 1752.

R. F. album, white, June; shrub; Pyrenees, 1830.

R. Hirsutum, scarlet, June; shrub; Switzerland, 1656.

R. Ponticum, purple, May; shrub; Gibraltar, 1763.

R. P. myrtifolium, purple, May; shrub; Gibraltar, 1763.

R.P. obtusum, purple, May; shrub; Armenia.

R. Purshii, white, July; shrub; New Jersey, 1811.

It will be seen from these, that the variety is great, and that, although we call Rhododendrons Americans, there is no plea for so doing, for the variety from other countries is greater. But the English hybrid varieties exceed in number and variety all the foreign ones put together, and excel in beauty as much as in number and variety; of these it would be impossible to give any correct list, and impolitic to try. The crosses have been varied by many who have made the subject of hybridizing their study, and each operation has been rewarded by many new varieties. Smith of Norbiton; Cunningham of Edinburgh; Burns of Tottenham Park; Rollisson of Tooting; Waterer of Knapp Hill; and others, have splendid selections of varieties reared by themselves. Many very beautiful varieties have been raised at Highclere, where we first saw Atro Purpurea, the darkest we ever saw anywhere; and Altaclarense, one of the best and most hardy of the deep scarlet crimson varieties. The Rhododendron is a most important shrub in dressed ground and choice shrubberies, but is frequently planted in what is called an American ground or an American garden. The difference of its blooms is the chief diversity it possesses; the narrow and rather mean-looking leaves of some of the ordinary varieties look poor by the side of the Catawbiense, which is oval and shining, and some of the hybrids, which are of considerable size. However, the foliage, though rich among the good sorts, and very noble on well-grown, close, bushy, or finely-headed plants, is not of much importance among the common varieties. In an ordinary shrubbery many people would seek to plant some of the earliest, and many of the hybrid varieties are as early as March and April; but the disadvantage of these early ones is, the flowers being spoiled by the spring frosts, which is almost always the case; so that, for choice in planting, we should take those which do not bloom before June or the end of May. Nothing is more vexing than to see a perfectly hardy and handsome plant throwing out its still more handsome blooms, and a frost hardly hard enough to whiten the grass of a field, in one night destroying all the flowers that are out. The only diversity worth mentioning among the leaves of the Rhododendron is, in the two variegated kinds; one the gold-edged, the other the silver-edged; these look very well in a border or clump, but the flowers are mean. The best and handsomest of the ordinary kinds are the R. Catawbiense, for the foliage is good, the habit fine and close, the flowers varied from white, or nearly so, to dark rose and dark purple, and all the grades between them. It would hardly be wise to recommend a person to wait till blooming time to choose Rhododendrons, although the choice is great, because the grand thing now is to lose no time. Not that we should fear the removal of them in actual bloom, but the great mass of planting should be done at once. For the planting now, we should choose Maximum Album, white; Catawbiense, all colours; Alta-clarense, crimson scarlet; some of the white hardy hybrids of Smith's, of Norbiton; and some of Waterer's hybrids. These would make diversity enough, but for ordinary shrubberies the first three sorts would do sufficiently well. These will be flowering May, June, or July, when frost has gone by, and there is no danger of their being damaged. These being all choice shrubs, should be in conspicuous places, either quite in front of a border, or singly, as specimens on a lawn; or if in clumps, so grouped as to be seen from the front. Some of these may be planted as standards, as single specimens, in permanent places near walks, so that they be well shown, as their bloom is splendid during the short time it lasts, and their foliage rich evergreen at all times. From these shrubs and trees we proceed to

THE LAURUSTINUS.

THIS, as an evergreen simply, has not so much as some subjects to recommend it; but when it is considered that the flower actually comes at the beginning of winter, and lasts until the winter has left us, it can hardly be too much valued. The foliage is always the most handsome when the plant is in flower, so that it can hardly be surpassed in usefulness in the planting of a shrubbery, or decorating any dressed ground. It is a handsome growing shrub, is obedient to the knife—for it bears pruning well at the right time—and is a most abundant bloomer. It grows to a considerable size as a shrub, and therefore, though not planted in a forward situation on a border, it ought not to have anything before it; for, among other pleasing qualities, it feathers completely to the ground, and forms a fine cone of dark green foliage, relieved with as much flower as leaf. Small, therefore, as they may be planted, it is best to put them where they will not be disturbed, and to have nothing too near. The Laurustinus moves at this time of the year worse than any; perhaps the spring, before it begins to grow, is the best; but, to be quite safe, it is better to buy them already well established in pots, and they may be then planted at any time or season. The next that call for attention are the

PORTUGAL AND COMMON LAUREL.

Both of these grow fast, but especially the latter, and the narrow-leaved varieties of it. The Portugal Laurel does not move well when old. Young trees must be chosen, and allowance must be made for their growth. The Common Laurel is the more rapid grower of the two; not that it grows more in actual quantity, because three or four shoots take a sort of lead off, and unless they are topped to check them early, the rest of the shrub hardly moves at all; so that to make them grow handsome and bushy, the shoots should be stopped at a foot length, and the lateral branches be thus encouraged. These may be calculated on to form thick wood, and fill up spaces rapidly; and of course are, on that account, considered common in planting, and in fine work are used sparingly. Yet the Portugal Laurel, with its dark bushy foliage, and the Common Laurel, with its shining bright green leaves, form an excellent contrast, and are well adapted to aid the proper diversity of large or small work. The Portugal Laurel may be moved well from nurseries where these awkward and miffy plants are constantly shifted; but if they have not been moved every two or three years, we should not like to trust them more than eighteen inches or two feet high. The Common Laurel is a free grower, and may be well moved three or four feet high; but plants bushy at the bottom should be chosen, and when once planted should be kept in shape, or trained to the form required.

THE BOX.

Box is one of those curious plants which may be clipped into any form, and has been as much played with and spoiled as the Holly or the Yew. It is handy in planting, because you may cut it into any form, and make it fit any place; and the very first year's growth finishes the surface of the foliage off even as well as some things would in half-a-dozen years' training. Of this there are but two varieties cared about in plantations—the one green, the other variegated. It is very hardy, very easy to move of any size, and is unlike all other Evergreens. Its very small leaves, growing so very close together, render it a contrast to everything. Its growth under trees forms a very good underwood generally, but is handy when the object is to show a contrast in foliage.

ACUBA JAPONICA.

This is a splendid plant, and was once in this country considered not only tender, but there were those who hardly trusted it out of the stove. This is valued on account of its rich foliage, unlike anything else, forming a striking contrast to everything in the form of a plant. The leaves are large, bright, flat, shining, and close together. The shrub is very close, bushy, and handsome; grows to a large size as a shrub, and deserves a place in the most choice plantations, though now cheap and common. It perhaps contributes as much brilliancy to the winter garden as any other shrub in existence, not excepting the best variety of variegated Holly. The colour of the leaf is bright green, blotched with white, or yellowish-white spots, of all sizes. As there are no varieties of it, our description is necessarily short, but we should never think of making a winter garden without it; and we have removed them when they were six feet through, and as high, without, so far as we know, losing a leaf. The roots are very much matted, and bring away a good deal of soil generally; and the same may be said of Box.

THE CYPRESS, OR CEDAR.

This is an elegant tree, and the varieties for garden and shrubbery purposes are called by the nurserymen Cupressus Baciformis, C. Sempervirens, and C. Thyoides; there are others, but we want no more. The first and last are called also Cedar of Goa, and White Cedar. They are beautiful trees, and though not absolutely necessary, aid in diversifying the foliage, which is the great feature to be aimed at. These are common nursery plants, and should be bought in pots. But the Cedar of Lebanon, which does not come under this name, but Cedrus Libani, is a most beautiful plant; and where it has attained any age, it is a magnificent tree. These should be planted only where they have plenty of room, if we once admit that we are to be guided in our planting by the progress which trees will be likely to make. We confess, that although we might place a Cedar or two where they should never be disturbed, we should use them in clumps, (for which their future growth would in time unfit them,) if it were only for the pleasure of their assistance while they were of a moderate size. We have no notion of depriving ourselves of the pleasure of a seven or fourteen years' acquaintance, merely because that acquaintance would in twenty-one years require to be got rid of; but no ground of any pretensions should be without a Cedar or two, where they could be left to perfect their growth, whether that took one century or three. Its dark green foliage, and fine pyramidal growth, fits it for any place while it is in size congenial to the place; and we should have no idea of doing without them because they outgrow our use.

THE YEW.

Mournful as the Yew may look in churchyards, it forms an admirable contrast to other Evergreens in gardens; we presume to appropriate a few of them to diversify the bright foliage of the Hollies, and the lighter green of the Pinus tribe. It is especially fine in its appearance while young, and perhaps few trees equal it in noble effect when mature, where it is left to its growth, instead of being mangled and tortured, as it is in almost all cases. As a shrub it assists the Evergreen garden much, and adds one more to the most remarkable contrasts of colour to be found among the shades of green. This also should by rights be bought small or in pots. It is impatient of damage to its roots, and is one of the kinds of shrub which, to our mind, loses its character if much pruned; although, as we see by the mangled remains in churchyards, they stand clipping and cutting up to a great age, and exhibit no signs of decay on that account. For these reasons we must press into our service for the winter garden, the Yew. The Common Yew, the Irish Yew, and the Variegated, are all we should care about; but the common one would do alone.

ANDROMEDA.

This is a magnificent tribe of plants, comprising many varieties and species; but in plantations of the nature of shrubberies, we should be very choice. First and foremost we should select Andromeda Floribunda, as a rich, dwarf, and very handsome shrub, rarely met with of any size, and for a long time only to be found in the nursery of the Regent's Park, then in the possession of Mr. Jenkins, and after his death his executors, until the ground was disposed of to the Royal Botanical Society. The late Mr. Jenkins, from some strange fancy, never would sell the plant, which was introduced from North America, and as far as the public knew, was exclusively in his hands, but kept for some time propagating it with considerable success; and such was the value of the shrub, that we saw one at Mr. Low's, not eighteen inches high, for which he had given six guineas. It was distributed a little before the gardens were given up; but some of the best specimens in the kingdom are now in the possession of the Royal Botanical Society. This fine shrub grows very bushy, and, as its name implies, is a most abundant bloomer; but it always looks well from the moment the buds show, and continues improving until they fairly open, which occupies several months, from before Christmas till May. The first plant we ever saw was shown at the Horticultural rooms, in a pot, and a medal was awarded for it: we forget to whom. It is doubtful whether the plant can be had now under half-a-guinea, of any size adapted for a border or shrubbery clump; for it is not so well grown anywhere, nor so well propagated as it used to be by Jenkins himself. The bloom comes at the end of every sprig, and is branching: when perfect, the terminal of every shoot is a little tree of white bells; but the whole plant, when bloomed well, is covered; all the flowers standing and spreading out above the foliage. It is one of the most charming little shrubs in cultivation, and must be placed very forward, or it would be lost and smothered. A small plant would be many years before it reached two feet high. Andromeda Arborea is a handsome tree, but would make a shrub, if wanted, by stopping the shoots, and forcing it to break out at the bottom, or low down the sides. This is, in the ordinary way, a noble plant, and worthy of a place anywhere. It does not bloom so abundantly, nor nearly so, nor does it flower at all until it has attained a good size. This must not be placed too forward, though it does not grow so fast as many shrubs and trees. It does not bloom till August. Of the hardy kinds there are nearly fifty, but beyond the two we have mentioned, we would recommend none, without their being chosen at the nursery.

PHILLYREA.

This tribe is only valued for its evergreen qualities, forming, as it does, a small-leafed variety of foliage as compared with Holly, or large as compared with Box. There are several kinds; but if necessary at all, as a diversity with others, two or three of the sorts are enough, and these should be chosen. One of the handsomest of the green sorts, and another of the variegated, will perhaps be considered sufficient, when we are backed by all the Evergreens we have already mentioned. Something may also be said on the score of situation; for in all places there is a different set of shrubs prosper most. In some places the Hollies, in others the Pinus tribe: in some the American plants generally do best; and therefore, besides choosing what we like best, we must endeavour to throw as much responsibility of the appearance as possible upon that class, or those classes, of plants which we see succeed in the neighbourhood; for atmosphere, as well as soil, has something to do with the permanent welfare of plants. If, therefore, the Phillyrea is seen to grow large, healthy, and fine, more may be done with these,. and less with some others; although most places will do well enough for a plantation in which enormous growth is neither looked for nor cared for.

RHAMNUS ALATERNUS.

The Evergreen varieties of Rhamnus are worth notice, even in select plantations; but the nursery name, Alaternus, comprises all the principal kinds. Still, like the Phillyrea, they are not absolutely necessary where we can get others already named to flourish. It may be, however, that some of the bright good Evergreens are scarce, or cannot be had the sizes we require; and it is in such cases that we must take anything we can get hold of that is of the right size. For this reason would we have all Evergreens looked at, and selections made; for, in planting a piece of ground, of any pretensions, we require variations of half a foot from the tallest shrub down to the most dwarf; that is, if we are to study immediate effect, and we are great advocates for that. We have heard or read somewhere, of a man being as fond of altering the situation of plants every year as his lady was of removing the pieces of furniture, and altering the complexion of her rooms. We see no objection, if a man likes it, to the whole plan of a garden being altered every year. It is a hobby, which the horticultural world has no right to complain of; and though it would seem barbarous to lift about things that were doing well, there are worse things than that done, and things that annoy the world more. But we must proceed to another fine tree, for even large plantations—

THE EVERGREEN OAK.

It is not many years since we raised a quantity of these from acorns; and the great diversity of foliage which they displayed was to us somewhat astonishing. They were not so varied as the Holly; but what struck us was, that we had seen hundreds of plants, said to be varieties, with not half so much difference as here was among only Evergreen Oaks. This subject forms, as you please to use it, a shrub or a tree. It breaks out freely when stopped; and we found that, hardy as the tree may be, the very hard winter of 1837 or 8 cut off some of the tops, which caused them to break out at the bottom, and form most beautiful shrubs. These ought to be placed where they have room to grow; for, though rather slow while in pots, or in nursery rows, they go off rapidly when they once lay hold of the ground, and soon assert their pre-eminence among the less pretending subjects. These are to be found in most nurseries in pots, and may be planted in places requiring trees; for they must not be depended on for any of the foreground ornaments.

THE MAGNOLIA.

Here we have Evergreen and deciduous; but with the latter we have nothing to do now. Of the kinds proposed to be used in a choice plantation, none excel the Magnolia Grandiflora, a beautiful shrub, with large shiny leaves, not unlike the common Laurel, only much larger, and with a white bloom, forming, until it opens, a bud as large as a swan's egg. The varieties of Grandiflora are many:—

Magnolia Grandiflora, white, blooms in August; tree; Carolina, 1734.

M. G. angustifolia, white, July; tree; Paris, 1825.

M. G. crispa, white, June; tree; North America.

M. G. elliptica, white, August; tree; Carolina, 1734.

M. G. exoniensis, white, August; tree; North America.

M. G. ferruginea, white, August; tree; North America.

M. G. lanceolata, white, August; tree; Carolina, 1734.

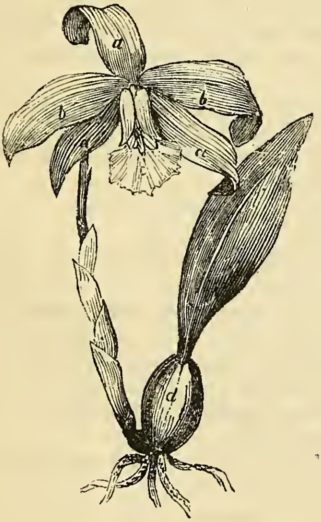
M. G. obovata, white, August; tree; Carolina, 1734.

M. G. præcox, white, August; tree; North America.

M. G. rotundifolia, white, August; tree; North America.

All these are splendid, and though in reality trees, may be made shrubs by cutting down young. They are of fast growth, and though hardy, at least so classed, they are apt to grow late in the autumn in some places, and therefore require to be in high and well-drained situations, for the sake of being forward in the growth. If secured from wind, so much the better, for that is often more fatal than frost to growing shrubs. Any or all of these varieties may be used, and there are hybrids. There is also a Japan species, called M. Kobus, with purple and white blooms, introduced in 1804, and this is classed as a shrub. There are immense trees of Magnolia of various kinds in different parts of the country.

There is a lofty wall at White Knights, covered with Magnolia Grandiflora, planted when each tree cost twenty guineas, at least so it is said. Certainly, there is nothing surpasses a fine specimen of the Magnolia Grandiflora in full bloom, whether we look at its noble flowers, its beautiful foliage, or its habit of growth ; and, though it is out of place here, the deciduous are as excellent in their way, as the evergreens are in theirs. Many other Evergreens might be mentioned, but we have confined ourselves to subjects adapted for the home plantations, genera and species calculated to lay out a first-rate place; others there are, and where it is desirable to grow large numbers of kinds, without regard to quality or appearance, they may be used ; but for striking effect, great contrast, and richness of foliage, arising out of well-displayed contrasts, the various kinds mentioned are all we should care about for a first-rate place of our own planting.



NEW ORCHIDACEOUS PLANTS,

INTRODUCED OR MADE KNOWN DURING THE YEAR 1844.

The sketch which is given above, represents the dwarf and interesting Cattleya Pumila; and it is given with the view of explaining more fully the terms which are unavoidably used in describing the different parts of the flowers of these singular, and in most cases handsome plants. The *sepals* (*a*) are the outer leaves of the flower; the *petals* (*b*), and the *lip*, or *labellum* (*c*), form an inner series, which are normally placed so as to occupy the intervening spaces between the sepals; attached to the lip are what is called the column and the pollen masses, but these being purely of botanical interest, we omit to notice any further. The *pseudo-bulb* (*d*), or leaf-stem, is not always present, but the majority of the species are so furnished; some of the kinds have a stem thickly clothed with leaves, and others have long club-like stems, from which, in some instances, leaves are borne the first season, and flowers afterwards; the flower-stems are not always produced from the base of the pseudo-bulbs, but in some species from their summit; and in some, two or three leaves are produced to each bulb. The flower-stem has several designations, according to its character: a *scape* is when the flower-stem rises direct from the root; a *raceme*, or spike, is a kind of simple arrangement, in which each single flower is attached by a small stalk to the principal one; a *panicle* is a more compound and loosely arranged head of blossoms. With these brief (and on that account imperfect) explanations, we hope the merest tyro will be able to gain some idea of the plants from the following descriptions. When not otherwise mentioned they require stove heat.

Ærides Maculosum, *Lindley.* (Spotted-flowered Air-plant.)—A native of Bombay, with a leafy stem. The flowers are in a raceme; individually of a light ground colour, with numerous spots, and the lip is blotched with purple: they are said to be sweet scented.

Angræcum Pellucidum, *Lindley.* (Transparent Angræcum.)—This bears the characteristic features of the Air-plants; it has a stem furnished with long, narrowish, curving leaves, and bears long drooping spikes of white flowers, which, although small, are sufficiently numerous, and of such delicate and transparent snowy whiteness, as to be really handsome when closely examined. It was imported from Sierra Leone, by Messrs. Loddige, with whom it has lately flowered.

Anguloa Clowesii, *Lindley.* (Mr. Clowes' Anguloa.)—A very rare plant, and possessing many attractions for those who have a taste for Orchideæ. It is pseudo-bulbous; the leaves are broad and stiff, and the flowers, of a peculiar hood-like construction, are clear lemon-yellow, with a white lip; they are four inches in diameter, and produced singly on a stalk of medium length, proceeding from the root. It has been obtained from Colombia, and has been flowered by the Rev. J. Clowes, of Manchester.

Anguloa Uniflora, *Ruiz and Pavon.* (One-flowered Anguloa.)—This is a rather coarse-looking, few-flowered, pseudo-bulbous plant, not likely to interest any one besides botanists; to them, however, on account of its rarity, it is extremely interesting. It has broad, lance-shaped, upright leaves; and the flower scapes bear each one large, hood-like, greenish-white flower, which is slightly tinged with yellow. It was received from

Colombia; and is also found in precipitous places about Muna and Chincao, and in the woods of Tarma, in Peru.

Ania Bicornis, *Lindley.* (Two-horned Ania.)—A terrestrial species from Ceylon, bloomed by the Rev. J. Clowes. It has long, rather narrow leaves, on stalks of considerable length, and bears a tall spike, rather thickly set towards the top with flowers, of which the sepals and petals are of a brownish green, and the lip of a pale lemon-yellow. It has no extraordinary beauty to recommend it, but will be prized by those who fancy this tribe of plants.

Aspasia Lunata, *Lindley.* (Crescent-lipped Aspasia.)—The sepals and petals of the flowers of this plant are yellowish, blotched with brown, the lip being large and white, stained in the middle with pale purple. It is a native of Brazil.

Bolbophyllum Macranthum, *Lindley.* (Large-flowered Bolbophyllum.)—This plant has a procumbent, rooting stem, from which at intervals springs up a large leathery oval leaf, the stalk of which is thickened at the base; from this base the solitary flower rises, on a stalk much longer than that of the leaf; the lip is the longest of the segments, and is triangular and pointed; the sepals and petals are also of the same shape, but the two uppermost ones stand erect and curve towards each other, whilst the two others stand out at nearly right angles from the rest; they are yellowish in the centre, and dull purple spotted with brown towards the extremities. It is a native of Singapore.

Bolbophyllum Pileatum, *Lindley.* (Capped Bolbophyllum.)—Also a native of Singapore. It is one of the smaller and less interesting of this tribe of plants. The flowers are yellow ochre coloured, with the lip stained with two purple ridges near its base.

Brassia Clowesii, *Lindley.* (Mr. Clowes' Brassia.)—This is a very handsome plant. It is pseudo-bulbous, with narrow sword-shaped leaves, and loose panicles of large and gay-coloured flowers. These consist of five narrow-pointed spreading sepals and petals, of a deep orange colour, with transverse bands of rich red brown, and a lip broadly heart-shaped at the point, and nearly white, then suddenly contracted, and again widened, so as to form another heart-shaped portion at the base, which is of a deep rich purple. It is a native of the Organ mountains of Brazil.

Catasetum Naso, *Lindley.* (Snout-flowered Catasetum.)—This is one of the singular kinds, with club-like stems, and hood-like flowers: the sepals and petals, instead of the usual dull green or yellow which prevails in the genus, are nearly white; and the lip, which terminates in a long snout, not altogether unlike the head and trunk of an elephant, is of a very dark colour. From the curious structure of the flowers, it deserves a place among its allies in the collections of the curious. It was introduced from Colombia.

Cœlogyne Fuscescens, *Lindley.* (Brownish-spotted Cœlogyne).—A very rare pseudo-bulbous species. Its blossoms, though large, are far from brilliant, or this would be one of the handsomest species of the genus: they are of a pale greenish yellow, with a few brown spots on the lip, and a band on the two side lobes of the flowers.

Comparettia Falcata, *Poppig.* (Sickle-leaved Comparettia.)—Much resembles C. Rosea, but has broader and larger leaves: it bears long drooping racemes of flowers, of a rosy purple, the lip being reticulated with veins of a deeper tint. It was introduced by Messrs. Loddiges, from the neighbourhood of the river Polochica, and succeeds best when grown in a cool stove.

Dendrobium Chlorops, *Lindley.* (Green-lipped Dendrobium.)—The flowers of this species are small, and of a pale nankeen colour, the base of the lip being pea-green. It is cultivated by Messrs. Loddiges.

Dendrobium Criniferum, *Lindley.* (Hairy-lipped Dendrobium.)—A Ceylon species, with small yellowish flowers of little beauty. It is allied to D. Scopa.

Dendrobium Kingianum, *Bidwill.* (Mr. King's Dendrobium.)—This plant has pseudo-bulbs, four or five inches long, tapering into a long narrow neck; on the top of this, two oblong dark green wavy leaves are situated, and between these rises the flower stalk, having about two rosy flowers gaily spotted inside with crimson. The flowers being freely produced, render it a very handsome plant. It is a native of New Holland.

Dendrobium Secundum, var. (One-sided-racemed Dendrobium.)—Sent from China by the collector of the Horticultural Society. The plant produces small dense spikes of small flowers, all arranged on one side, and the present variety differs from the species in the rich, deep, rosy purple colour of the flowers, with which those of the original kind bear no comparison.

Epidendrum Aeridiforme, *Booth.* (Aëri-des-like Epidendrum.)—This species in habit and mode of growth has some resemblance both to E. Natans and E. Patens. It was introduced from Rio in 1839, to the collection of Sir C. Lemon, Bart. M.P., at Carclew, and flowered there in December 1843, and about the same time the following year. The leaves are from six to eight inches long, and from an inch to an inch and a half wide, clasping the stem at the base: the stem is terminated by the loose panicle of eight or nine brownish-green dingy-looking flowers, which are, however, remarkably sweet-scented in the day-time. It is not of much interest to the cultivator.

EPIDENDRUM CALOCHIELUM, *Lindley*. (Beautiful-lipped Epidendrum.)—This has the habit and character of E. Altissimum. It produces large spreading panicles of dingy-coloured flowers; the sepals and petals are narrow and bronze-coloured; the lip frilled, margined with bright yellow, and irregularly blotched with purple. It has been flowered at the Royal Botanic Garden at Kew.

EPIDENDRUM CERATISTES, *Lindley*. (Horn-columned Epidendrum.)—A pseudo-bulbous species of this extensive genus, with erect, sword-shaped leaves, and a long, narrow, drooping panicle, bearing clear, green, sweet-scented flowers, with a whitish lip, similar to those of E. Selligerum: the column has two horn-like arms. It is a native of the Spanish main, whence it was brought to the Horticultural Society by Mr. Hartweg. It flowered in October last.

EPIDENDRUM HANBURII, *Lindley*. (Hanbury's Epidendrum.)—A native of Mexico. The leaves are thick and leathery; the sepals and petals of the flowers deep dull purple, and the lip pale rose, with crimsom radiating veins.

EPIDENDRUM MACROCHILUM, var. ROSEUM. *Paxton*. (Rose-coloured, large-lipped Epidendrum.)—The original E. Macrochilum is one of the most ornamental of this genus; many of the species are small, and dingy-coloured, but in this the flowers are large, and the broad white lip is prettily spotted with crimson. The present variety differs in having a broad, flat, rosy-coloured lip. The plant is pseudo-bulbous, bearing unbranched, erect spikes of blossom: the sepals and petals of the flower are of a dark purplish bronze, of an oblong form, with the points incurved; the lip is flat and obcordate; that is, with a deep indentation at the extremity, and of a fine rosy tint. It is a native of Guatemala, from whence several other varieties have also been imported.

EPIDENDRUM PTEROCARPUM, *Lindley*. (Wing-fruited Epidendrum.)—Not a very conspicuous-looking plant. It has oval pseudo-bulbs, from the top of which two or three leaves are produced, and between these springs up the flower stalk, bearing five or six brownish-green flowers, with a yellowish lip. It is a native of Mexico.

EPIDENDRUM PURUM, *Lindley*. (Pure-coloured Epidendrum.)—This is from Caraccas. It has roundish elongated stems and leaves, nearly half an inch wide, and six or eight inches long; the flowers of medium size, and of a pale green colour, produced in a thin panicle. The sepals and petals are narrow, and the lip three cleft.

EPIDENDRUM VERRUCOSUM, *Lindley*. (Warted Epidendrum.)—A native of Mexico, with rosy-coloured flowers, composed of five long narrow sepals and petals, and a broad oval lip, streaked with darker coloured veins. It is fragrant, and rather pretty.

ERIA BRACTESCENS, *Lindley*. (Long-bracted Eria.)—This species has short fleshy stems, or pseudo-bulbs, bearing two or three oblong leaves, and a well-furnished raceme of rather small but pretty flowers of a greenish white, with two crimson spots near the centre. It has been imported both from Singapore and Burma.

ERIA VESTITA, *Lindley*. (Clothed Eria).—This is the Dendrobium Vestitum of Dr. Wallich. It is a singular plant, being clothed with a thick reddish-brown hairiness: the leaves are thick and lanceolate, and the flowers, of a reddish-brown outside, and white inside, hang down in pendulous spikes, which are longer than the leaves. It inhabits damp and shady situations in the Indian Archipelago.

GONGORA MACULATA, var. TRICOLOR, *Lindley*. (Three-coloured spotted Gongora.)—These Gongoras, with pseudo-bulbs, broad deep green leaves, and long pendant spikes, beset with numerous insect-like flowers, are among the most beautiful of this tribe. This variety is a very handsome one; the general ground colour is yellow, variously banded and blotched with rich brown, whilst the lip is white, with a few darker stains. It is said to come from Peru, and has been flowered by the Rev. J. Clowes, of Manchester.

HABENARIA CANDIDA, *Lindley*. (Snow-white Habenaria).—A small terrestrial species, the stems of which bear two wavy narrow-pointed leaves, and a spike of four or five narrow-petaled snow-white flowers, which have only a slight tinge of green colour on the spur at the back of the flower. It is a native of Sierra Leone.

LACÆNA BICOLOR, *Lindley*. (Two-coloured Lacæna).—This is a very rare plant, and therefore is highly esteemed by the *fanciers* of Orchidaceæ: it is not, however, at all striking in its appearance, and therefore not likely to become generally esteemed. It is pseudo-bulbous; the flowers are produced in long pendulous spikes, nine or ten on each; individually, they are of a dull greenish colour, covered externally with short hairs, and having a purple blotch in the centre, with some other faint markings in the interior of the flower. It was introduced from Guatemala, where it was found growing at an elevation of 7000 feet above the sea.

LÆLIA SUPERBIENS, *Lindley*. (Stately Lælia).—This is an exceedingly fine plant, which grows naturally in the cooler districts of Guatemala, and is found to succeed in a lower temperature than is usually given to these plants. It has pseudo-bulbs from eight inches to a foot in length, with rigid shining leaves of nearly equal length; from the top of these bulbs proceed the flower-stalks, six feet in length, bearing numerous flowers near the extremity: the flowers are of a delicate rose colour, with the lip of a rich crimson, variously streaked with yellow and dark lines. In its wild state it sometimes attains to a very large size.

Lælia Pedunculata, *Lindley*. (Pedunculated Lælia.)—A neat dwarf plant, with small oval pseudo-bulbs, and oblong leaves. The flower-stem bears four or five delicate bluish lilac flowers, with a dark blotch on the lip. It is from Guatemala, flowering in the autumn.

Leochilus Herbaceus, *Lindley*. (Herbaceous Leochilus.)—A very small and inconspicuous plant, imported from La Guayra. The sepals and petals are green, with a red stripe along their centre; and the lip is white, faintly tinged with green, and banded irregularly with pale purple.

Leochilus Sanguinolentus, *Lindley*. (Deep-red Leochilus.)—This plant, though a minute one, is exceedingly interesting and handsome, when closely investigated. The lip is the most interesting portion; it is of a deep crimson colour, richly studded with clear purple spots. It has been received from La Guayra.

Lissochilus Roseus, *Lindley*. (Rose-coloured Lissochilus.)—This is a terrestrial species, and one of very great beauty. It has long, broad, stiff, plaited leaves, with a flower-stem three or four feet high, forming at the top a loose open spike of its very peculiar flowers. The sepals are of a rich velvety brown, whilst the other parts of the flower are of a bright rose colour. It is a native of Sierra Leone.

Lycaste Aromatica, var. Retusa, *Lindley*.—This is pseudo-bulbous, and differs from the old Lycaste (or Maxillaria) Aromatica, in having clear yolk-of-egg coloured flowers, without any tinge of green; and in having the middle lobe of the lip much dilated, and turned back, and almost two-lobed. It was obtained from Lima, by G. Barker, Esq., of Birmingham.

Lycaste Crinita, *Lindley*. (Hairy Lycaste.)—This is much like L. Cruenta, with flowers of the same colour; they are however smaller, interiorly clothed with long silky hairs, and differently formed in the lobes of the lip. They have not the crimson stain from which L. Cruenta is named.

Lycaste Gigantea, *Lindley*. (Large-flowered Lycaste.)—This is a fine pseudo-bulbous species, collected by Mr. Hartweg. It has very large flowers, of a clear yellowish-olive colour; and the lip, or central portion, is of a deep rich maroon, bordered with orange.

Lycaste Skinneri, *Bateman*. (Mr. Skinner's Lycaste).—The flowers of this splendid plant are of immense size, measuring six inches across: they consist of three broadly oval, spreading sepals, of a pure white, faintly tinged at their base with crimson, and a central portion of rosy petals folding around the lip, which is of a deep velvety crimson. The flower-stalks rise from the base of the pseudo-bulbs, which are somewhat ovate, and bear the broadly lance-shaped plaited leaves. There are several varieties in cultivation, differing in the size and tinting of the flowers. It is from Guatemala.

Maxillaria Scabrilinguis, *Lindley*. (Rough-tongued Maxillaria).—This plant has long furrowed pseudo-bulbs, and erect, many-flowered spikes of dull purplish yellow flowers, the lip of which is remarkable for having its extremity covered with little tubercles. It was found near Loxa, in Peru, and requires a cool stove.

Microstylis Histionantha, *Link*. (Sail-flowered Microstylis).—A terrestrial species, generally bearing a pair of large, nearly oval leaves, and an erect flower-stem, on the top of which the numerous small green inconspicuous flowers are produced, in a dense flat head. It flowers in October and November, and was procured from a sale of Colombian plants, for the Royal Botanic Society, in whose stove it has flowered.

Miltonia Cuneata, *Lindley*. (Wedge-lipped Miltonia).—A beautiful pseudo-bulbous species, allied to M. Candida; the flowers are nearly four inches in diameter, the sepals and petals are narrow and wavy, of a rich brown, tipped with white. The lip is broad, wedge-shaped, and rounded at the base; pure white, with a tinge of pink near the base. Messrs. Rollison, of Tooting, have lately flowered it.

Oncidium Lacerum, *Lindley*. (Torn-lipped Oncidium). — A very pretty species, with rounded (terete) leaves, and numerous yellow flowers, borne on a contracted panicle; the lip of the flower is lacerated, whence the name. It is from Panama.

Oncidium Spilopterum, *Lindley*.—This is a handsome species, related to O. Lanceanum, but with a peculiar erect habit. Its flowers are large, with brownish purple sepals and petals, and a yellow lip, stained at the base with purple; they are borne near the top of the flower-stem, which rises erect, a little above the leaves. It was imported from Brazil.

Oncidium Tricolor, *Hooker*. (Three-coloured Oncidium.)—A very neat and pretty stemless species, with subdistichous (two-rowed), rigid, triquetrous (three-angled) leaves, having a deep grove or channel on the upper side. The flower-stems (scapes) are produced from the axils of the outer leaves, and rise about a foot high, branching into a loose slender panicle; the sepals and petals are small, greenish yellow, transversely streaked and spotted with red; the lip is white, with two small lateral lobes and a large centre one, which is kidney-shaped, or lunate. It was collected by Mr. Purdie, in Jamaica, and sent to the Royal Botanic Garden at Kew, where it flowered in March and April, 1844.

Physurus Pictus, *Lindley*. (Pencilled Physurus.)—A native of Brazil, introduced by Messrs. Loddiges. The leaves are curiously veined, appearing to be covered with a net-work or film of silver; the small white flowers are borne in spikes, and have a bar of dark brown on the middle of each sepal and petal. It grows among decayed leaves.

Pilumna Laxa, *Lindley*. (Loose-flowered Pilumna.)—A new species from the woods of Timbio, near Popayan. It has linear oblong leaves, and a loose raceme of flowers springing from the base of its pseudo-bulbs; the sepals and petals of the flowers are narrow, and pale watery green, slightly tinged with purple, and the lip is cream-coloured.

Spiranthes Lobata, *Lindley*. (Lobed-lipped Spiranthes.)—A terrestrial species, with oblong pointed leaves, and yellowish flowers, the centre division of which is three-lobed, whence the name. It has been cultivated by Sir C. Lemon, who received it from the neighbourhood of Real del Monte.

Spiranthes Diaphana, *Lindley*. (Transparent sheathed Spiranthes.)—This is probably from Mexico. It is a curious plant, flowering (apparently) before the leaves are produced, that is, if we reckon by the calendar; the stems are eight inches high, with three or four semi-transparent scales, streaked with rose; the flowers are inclosed in a head of such sheaths; they are whitish, with green streaks outside, and a yellow blotch on the lip.

Vanda Parviflora, *Lindley*. (Small-flowered Air-plant.)—An inconspicuous species from Bombay, with a leafy stem, and small pale ochre-coloured flowers, the lip being sprinkled over with purple dots.

Warrea Cyanea, *Lindley*. (Blue-lipped Warrea.)—This is a native of Colombia, and was imported by Messrs. Loddiges, in 1843. It is nearly allied to the Maxillarias and Lycastes, and among the members of its own genus is most nearly related to W. Tricolor, but is altogether smaller. It is pseudo-bulbous, the flowers are white, but the lip, which is somewhat wedge-shaped, with a rounded head, and a distinct point, is of a most beautiful pure blue colour, finely contrasting with the white of the other portions. This colour is novel among Orchidaceous plants.

MANAGEMENT OF SMALL GARDENS.

Some writer on gardening, Mr. Loudon, we believe, used to say that it required as good a gardener to manage a small garden as it did to keep up one of ten or a hundred acres. Without going to this extreme, we may fairly assume that there is great difficulty in keeping up the appearance of a small garden, and providing a succession of flowers. At many villas out of town the ground allotted to each is very inconsistent with the size of the dwelling, totally inadequate to produce vegetables, and hardly large enough to make a tolerable show as an ornamental appendage to the house or a flower-garden. The larger portion of this is generally in front, and unless the plants can be removed as soon as they are out of bloom, it can never be kept in high condition. On this account a small garden is often more expensive than a large one, because many little sacrifices are necessarily made for the sake of appearance, and great management is required to make this sacrifice as small as possible. Generally speaking, one of the two gardens, either the back or the front, must be occasionally untidy. The greatest assistance towards enabling us to keep up a first-rate appearance is a general system of pot culture; for, by a judicious observance of the seasons, and a succession of plants grown in pots, and kept ready at all times to be moved and replaced, a garden need scarcely for a single hour be other than neat, well-stocked, and abundantly supplied with flowers and ornamental plants. As the principal stock in trade, if we may be allowed to use the term, with an amateur, will be flower-pots, he had better expend a few pounds at once in ordering them by the cast from some pottery; he will have to pay from two to three shillings per cast for them delivered at his house, anywhere within a few miles of the pottery, or probably any nurseryman with whom he is in the habit of dealing will supply him at something like those prices. The sizes he will chiefly want will be sixties, (which means sixty to the cast,) forty-eights, thirty-twos, and twenty-fours; though a cast of thumb-pots, as they are called, which are the smallest made, and a cast each of sixteens and twelves, will occasionally be found useful. In the garden intended to be kept in high condition, he may confine everything he puts in it, to potted plants, or he may use the potted plants only partially. Some very gay flowers and plants ought especially to be potted, not so much for the sake of wintering them, as for the purpose of being able to supply instantly the deficiencies of those which go out of flower. We will suppose now, that we have a naked garden in front of a smart suburban villa, and some room for potting and growing plants behind; and we will go one step further, and fancy we have not a plant in a pot at present to put in it; we should commence operations by employing a gardener to lay it out in something like a form, not however with a parcel of trumpery beds and walks a foot wide, but with as bold and handsome a design as the size will admit of; we would rather see a circular bed in the middle, a border all round the side, and the rest all grass, ugly as it is, perhaps, compared with what it might be, than have a space cut into shreds and patches, inconsistent with every idea of utility. But there is no reason why it should not be well laid out. Now the permanent shrubs calculated to ornament a garden of this kind should be Hollies, not two alike; one or two Acuba Japonicas, Arbutus, Rhododendrons, not two alike, Azalias, ditto, Andromeda Floribunda, Chinese Privet, Box, green and variegated, Red Cedar, and Cedar of Lebanon, American and Chinese Arbor Vitæ, Pyrus Japonica, Magnolia Conspicua and Purpurea, and if there be space enough, Common and Portugal Laurel, Scarlet and White Thorn, not two alike, double-flowering Cherry, Almond and Peach, Snowy Mespilus, Guelder Rose, and Laburnum. There are many other shrubs calculated to ornament extensive places, but in general the slow-growing things alone should be planted, either as evergreens or deciduous shrubs and trees. Having procured an assortment adapted to the size and design of your place, they may be carefully planted at the distance, and in the order which may best suit your place and your taste. If you propose to hide a paling or ugly fence on either side with a border of shrubs, Hollies are the most effective and beautiful; but between these, and close to the fence, standard deciduous trees might be planted; such as the varieties of the Thorn, some beautiful in flower, others rich in the shape and size of their fruit; and as eight or ten varieties of Holly may be had, so distinct as to be seen at a moderate distance, they would form quite a desirable feature. The Rhododendrons, Azalias, Magnolias, &c., may be disposed according to fancy; always, however, considering that two of any one sort of them are enough. But if there is any danger of altering the plan afterwards, the best way will be to pot even the shrubs. The subjects now in pots, in a proper store, would be the spring bulbs, such as Hyacinths, Crocuses, Narcissuses, Snow-drops, early Tulips, Ranunculuses, Ammonias, Hepaticas, Wall-flowers, Polyanthuses, Primroses, Heartsease, Mignionette, Stocks, Nemophylla Insignis, and varieties; all of which would be doing well in a cold frame; but those who have none, and are beginning, may just save the season for the bulbs and Ranunculuses and Ammonias, by purchasing them directly, already potted; and Mignionette, Stocks, Wall-flowers, Nemophylla, &c., may be bought. It is to be remembered that all we have mentioned are pretty hardy, and except that they may be a little retarded by it, they may be at once sunk, pots and all, into their places in the border. The Polyanthus, Hepatica, Primrose, Wall-flowers, Stocks, and Heartsease, may also be planted out. The pots must be sunk low enough to hide the rims. In due time Larkspurs, Lupins, later Stocks, China Asters, the new tender and half-hardy annuals, Geraniums, Hydrangias, and other summer ornaments, must be either raised or procured; and by a very judicious management, the garden may be literally kept full of flowers, and undergo constant changes by the removal of the pots of decayed plants, and the substitution of those which are about to flower. The very confinement in pots is advantageous in a small garden, as it prevents that rank and vigorous growth which inclines a plant to run down everything else; and the Dahlia itself will be restrained within ordinary bounds, if the root be confined in a pot before it is committed to the ground. Experience will greatly assist the amateur in his ultimate regulation of the ground, and the succession of flowers. He may please himself as to what portion he will have potted, and what he will have in the open ground. He may choose to have certain plants permanently established, and others removable; but whether he partially or entirely relies on potted plants, he will find it a vast assistance in keeping up the floral beauty of a small garden; and the magic, as it were, that can be exercised in the almost certain changes that could be effected any morning before breakfast, ensures pot culture a steady patronage among that class to which it must be so useful and so gratifying.

THE DEODAR, OR INDIAN CEDAR.

CEDRUS DEODARA.

BY JAMES GRIGER, AUTHOR OF THE EASTERN ARBORETUM.

THIS tree is one of the loftiest and grandest of the Coniferæ. In England it is as yet merely a graceful object, so that whether it will eventually assume the dignity belonging to its kindred of the Himalaya is a matter purely of conjecture. Its being perfectly hardy, like the Cedar of Labanon, has secured it a place in every British collection of Pines; though it has to be regretted that so many of the specimens foisted upon the unwary are merely cuttings grafted upon the common Larch, which, as is well known, is a comparatively low-growing tree, and is besides a deciduous one. The noble nature of the Deodar, therefore, when allied with this object, is scarcely to be expected; and from the specimens we have seen so treated, it is already apparent that the scion outgrows the stock, and that the demand upon the latter is more than it is prepared to respond to. To remedy this, as far as possible, the best way is to dig out the soil by the side of the tree, and to lay it down so that the part above the stock may take hold, and hereafter grow upon its own roots.

The cones of this tree resemble those of the Cedar of Lebanon, and are ripe in the months of November and December, when they fall off like the Silver Fir cones. They may be crushed into pieces even with the hand, and the seeds are then easily picked out; the good ones are plump, whilst those which are useless are flat and shrivelled. During the month of May, a light friable piece of ground should be selected, (and in the climate of England it will be all the better to be shaded,) and after being dug and raked, the seeds should be sown in beds in the same way as Larch seeds are sown, viz. by covering them to the depth of two-thirds of an inch. The plants will appear in June, and in those beds they may be allowed to remain for two years, keeping them free from weeds; they should then be transplanted into lines, and treated in every respect the same as the common Larch-tree. The system of keeping them in houses is just as absurd as growing the common Scotch Pine in heat, or any other plant which is equally hardy.

According to all accounts, the wood of this tree is very durable and easily worked; but as it claims attention at present chiefly as a landscape ornament, planters would do well to take advantage of this graceful object, and grow it around their residences, and on the bolder parts of their parks. The soil it delights in most is a sandy loam, and the situation, a northern exposure. Under those circumstances it is already rearing its beautiful form on several hills throughout the north of Scotland.

NOTES ON THE VINE.

BY JOHN M'DONALD, C.M. C.H.S.

Dr. Lindley, a received authority at the present time, says, "the system of English Grape-growing requires to be changed." As I have for some years thought so too, and acted conformable to the idea, I may, perhaps, be allowed to say a few words on what I have in practice found to be a simple and sure method of growing the Vine well and profitably. If we may judge from the commotion making by the Polmaise system, and Hoare's new work, the Vine culture, like the Pine culture, is destined to be revolutionized, and made, in the first place, a nine days' wonder to the mere looker-on, and perhaps many years' annoyance to the practical man.

The Vine is undoubtedly accommodating and ductile in its nature beyond, perhaps, any fruit-bearing plant we possess, otherwise it would never do so well under such and so many various treatments. Still there is undoubtedly a right way. My own experience, combined with fourteen years' observation, puts it in my power to say that *deep* borders of *retentive* or *highly-manured* soils are *not*, as is often maintained, the most suitable medium, nor the most profitable, in which to grow the Vine. It must be obvious to all who may give themselves the trouble to think or observe, that Grapes growing on Vines in such borders, are in general, and in cold, wet seasons particularly, apt to be ill-coloured, of indifferent flavour, and with a strong tendency to shrivel prematurely, while the young wood, in all but the earliest forced house—which under such circumstances, it will be small and long-jointed — will require much firing to ripen it; which artificial heating, if accomplished by the medium of smoke-flues, will be sure to encourage the generating and ravages of red spiders and such pests.

Therefore, seeing such to be the produce and consequences of *deep rich borders*, and a *high dry atmosphere*, theory would lead us to conclude that *shallow* borders of *light porous* soil would be the most fit and proper medium into which to plant, and that a *high* day temperature, with *abundance of air*, and a *low* night temperature, with *abundance of moisture*, and a close, calm atmosphere, would be the most proper climate in which to grow the Vine; theory, I say, would lead, and did lead me to conclude thus years ago; and in practice I have had ample proof of the correctness of such surmises.

When I entered into the charge of the gardens at Riccarton, in May 1842, I found the Vines growing in wide and very deep borders of rich, heavy, and retentive soil; where, notwithstanding the drought and warmth of that summer, they made wood, the best cane of which was scarcely the thickness of an ordinary goose-quill; and leaves, the largest of which would scarcely cover the palm of the open hand; and fruit small, with a great tendency to shrivel, the very best of which was but ill-coloured and of indifferent flavour. I certainly felt vexed and annoyed at the circumstance, but had the consolation—if so it may be called—of being informed by my employers, that such, *and no better*, had been the crops and appearance of the vineries for many previous and successive years. Next Autumn I pruned the Vines severely, and early in Spring, 1843, I lifted their roots, excavated out the soil in which they were planted, to the depth of thirty inches, then trod and beat into a pretty firm floor, with a good slope outwards, the surface at which I had then arrived, and upon which I laid a stratum, one foot in depth, of old peas sticks; above which I placed a stratum of decaying tree leaves, and some partly decomposed herbaceous refuse, mixed with light, rich, but very sandy soil. On this stratum I laid the roots, and over these I put about a foot of the original soil, made lighter by the addition of a considerable quantity of lime rubbish, sand, and thoroughly decayed leaves—indeed, upwards of one-third part of the one-foot thick stratum over the roots was composed of these light, poor materials. The consequence has been that now, in Autumn 1844 (eighteen months after the operation), the canes all over the houses are round, firm, short-jointed, plump-eyed (such, and in many instances better, than the specimen I herewith enclose to you), having leaves from eighteen to upwards of twenty inches direct across, and fruit of first-rate quality. My employers, and many others who have tasted of it, say so. Some canes of last year's growth have this season borne twelve pounds' weight of fruit; and some canes of this year's growth will, next year, easily, and well, bear and mature twenty pounds of fruit.

Making this assertion of the capabilities of an annual cane, leads me, in conclusion, to attempt to give you a sketch of my mode of training and pruning the Vine, as it is different from the modes practised in this locality.

During the first year—it matters not whether the plant be a young one, or a cut-over old plant—one shoot, and only one, is trained up direct under the rafter; one, of course, from a *different* root being trained up under the centre of the sash; and so on, one under each rafter, and one under each sash, all over the house, and all trained and treated alike; which shoot is allowed to grow unchecked until it has attained a length of six to eight feet, when, having it well grown, from fifteen to twenty eyes or buds formed, it is stopped then, and repeatedly afterwards, during the season. When the pruning arrives (which, with me, is the end of Autumn), all the indifferent eyes or buds are scooped out from the shoot, until ten or twelve only are left. These will next season produce strong shoots, having, some three bunches of fruit, some two, and all at least one bunch; which bunches must be cut away, or thinned, until only what will mature to ten or twelve pounds of fruit are left. All the shoots, of course excepting the mother, or leader shoot, *and one from the base* of the plant, are stopped one eye beyond the fruit, while the leader and base shoots are each allowed and encouraged to perfect their ten or twelve good eyes, for next or third year; on which year the original cane, same as second year, bears fruit only on the shoots proceeding from the twelve eyes on previous year's growth, the twelve shoots on the under part of it being cut close away after bearing first and *only* crop, and no others allowed to emanate from *their* parent stem in their place, which place will be occupied on this, the third year, by the shoots proceeding from the young, or base shoot, of previous year's growth. On fourth year a third young or base shoot is allowed to perfect its twelve or fifteen eyes, and the original cane, after bearing a crop on its twelve upper eyes, is cut clear away as near the ground as possible; and so on, year by year, a young cane is started, and an old one cut away. Thus, bunches of fruit, numerous as by the open system, and much heavier, may be had regularly all over the house, without old or weak wood, or confusion of training.

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Here I have said nothing of planting, as I take for granted that gardeners in general would have grown the roots of their Vines outside the house, and the stem introduced *under the surface* of the soil into the house.

SIX BEST HARDY SHRUBS
FOR EXHIBITIONS.

This kind of collection is common at exhibitions, and will become more so; therefore will a few words of advice to every exhibitor be useful. Of the many thousand plants which might claim attention in this department, the six which shall be called the best, must indeed have some pretensions. But the very fact of choosing six, presupposes they are to be shown in pots, and therefore should be worthy of a place among the plants of manageable size. It would be out of all character to take the Wisteria Sinensis, which will run twenty-five feet in a season, and which could hardly be induced to flower in a pot well enough to form an apology for its millions of blooms in the open ground. No; we are confined in our choice to six hardy plants, such as we could produce on a show table in ordinary flower-pots. We require all the good qualities we can get in a plant, but when we cannot get all we want, we must be content with all we can get. First and foremost we must place the Rose, handsome and odoriferous; next the Honeysuckle; then Magnolia; then follow Rhododendron, Lilac and Dutzia; Andromeda and Azalea. To begin with the Rose, the king or queen of flowers; there is hardly a plant that can be said to come near it. The gracefulness of its growth, the splendour of its bloom, the richness of its fragrance, all assist to place it (alone indeed, for its fragrance never leaves it,) far before all other odoriferous plants. Whether we take the Moss, the Cabbage, the Maiden's Blush, or any of the more delicate or more gaudy varieties that the late years have produced, there is nothing to come near the Rose; and in selecting for show, the choice would only be between the colours, the other five plants you mean to show, having some reference to the choice; thus if we had a white Rhododendron, a white Lilac, or a white Magnolia, we should unquestionably take either the Moss, or Cabbage, or some coloured Rose. The Honeysuckle presents us but few varieties, but the Dwarf Dutch is the most appropriate for a pot, and may be grown less than two feet high, covered with bloom. The Magnolia offers a choice; Conspicua has a white bloom, Purpurea a purple one; both are handsome, both bloom abundantly on small plants, and it is better to have both in growth, that you may adapt the colour to the rest of the plants. Lilac is an old-fashioned but elegant plant, and the small-leaved varieties give the choice of colour white and lilac; you should grow both, that both may be ready. Rhododendrons afford a great choice; Catawbiense is the richest of all the very hardy kinds, and the most varied. If our readers take a walk to Messrs. Rollisson's of Tooting, they may select from the Beddington stock some of all colours; deep purple, light purple, lilac, and almost white; and there are many hardy hybrids which would increase the choice; as one only would be wanted in the half-dozen hardy plants, a few will do to choose from. Dutzia Scabra is a delicate and pretty growing shrub, whose bunches of white blossoms make a very fine appearance all over the plant. Besides the six genera we have mentioned, the Azalea, which we should be loth to risk showing with the Rhododendron, gives other chances of season and colour. Pontica Major is yellow, Coccinæ Major is red, Aurantia Major is orange colour, and either of these might give an extra brilliance to half-a-dozen; still they should be grown as of the same genera with Rhododendron, and not be both shown in the six plants. Then we have some of the novel Clematis affirmed to be hardy, but we do not wish to see a more unequivocal, safe, brilliant and interesting half-dozen, than could be supplied out of—

A variety of handsome Roses.
Siberian and Persian Lilacs.
Dutch and other Honeysuckles.
Catawbiense and hybrid Rhododendrons, Azaleas, &c.
Magnolia, Conspicua and Purpurea, &c.
Dutzia Scabra, and
Andromeda Florabunda.

They require very little culture; take them up carefully, give them pot-room in loam leaf-mould and peat in equal quantities, and forward or retard them according to the season you want them: nothing can go by half-a-dozen handsome ones well bloomed; at all events, anybody might have the field against our favourites.

POLYGALA DALMAISIANA.

The French account of this hybrid variety of Polygala is thus given:—

"This superb and elegant plant was obtained in 1839 by Mr. Dalmais, the gardener of Mr. Lacene. It is produced from the Polygala Grandiflora brought to bear by the Polygala Cordifolia. Its foliage is of the former and its colour of the latter. Its form is very elegant, it is in continual bloom, particularly between the months of January and May, if kept in a temperature of eight degrees. Its large flowers are richly shaded with a violet purple of an azure hue, such as no painter could imitate.

"At the juncture of the two or three leaves which precede the bunches of flowers, are always to be found two or three leafy branches, which lengthen and surround it, and each of which soon terminates in as many bunches of flowers; the foliaceous and flowery branches succeed one another during the whole year.

"The young sprout, or marcotta, growing rapidly, is not in full bloom until the second year of its independent growth. This shrub is easily cultivated, it is the least delicate and the finest of its species; it requires in the beginning to be nipped from time to time, and well nipped, as also to be pruned closely at least every two years; it thrives in heathy ground, mixed with a third of vegetable earth, fully exposed to the heat of the sun; its flowers are then abundant, otherwise it becomes long-shanked and yields but few flowers; it should be watered frequently in summer, and moderately in winter. This beautiful new flower is precious above all in winter for the ornament of our green houses, and our saloons."

Description.—Stems and branches of olive green, cylindrical branches, green, and soft to the touch. Leaves lanceolated sessile, thick, opaque, with fibres almost imperceptible, of a pale green, bordering on a pink green. Flowers in bunches of from five to eight large flowers, having at the base three gold coloured leaves, oval obtuse, thick and similar, of which one is exterior and two lateral, exceedingly downy and firm. Sepals, pale violet outside, and tipped with green, while the superior surface is of a lilac violet, very rich and very elegant. Petals, five plain, very dissimilar, alternate with the sepals, two upper little irregularly oval, obtuse whitish, sustained by fibres almost parallel, and cherry coloured, their upper part being free, one of them covering the other two lineal laterals in the form of a scythe, presenting the concavity above and longer than the upper ones to which they are united; finally, the fifth and lower one, shaped like a boat, whitish at the base, purple at the top; its dorsal loosens towards the middle, and ends in a wide lilac fringe, with numerous and very elegant filaments. The shape of the flowers is perfectly described in the engraving, as well as the shades of the leaves.

FLORISTS' FLOWERS.

REASONS FOR THEIR NOT IMPROVING MORE RAPIDLY.

It has often been matter of surprise to large growers that they are unsuccessful with seedlings, while small cultivators, mere amateurs, with a few rods of ground, produce novelties which dealers are glad to buy; it is, therefore, a fair subject of inquiry, which I will endeavour to satisfy as well as my experience in such matters enables me. I have travelled many miles to see seedling flowers, gone over many nurseries, and not a few private establishments, and, from very close observation, as well in all these as in my own establishment, I have drawn my conclusions. It is well known, I presume, that all flowers which have been improved by cultivation have a tendency to go back to their simple or natural state. I have seen this so often, and so much, that it seems almost presumptuous to mention what others must have seen as well as myself; yet it is an important fact to impress on the minds of young Florists; for this disposition to go back to their simple state is manifested many ways: first, it is seen by the presence of the most simple flowers and near approaches to the original state among seedlings, which are from seed that has been saved in the most careful way imaginable, from flowers of the best kind, and far removed from any of the original kind, or even of an inferior sort; secondly, it is seen in the great number of the simple or original kind that will be found among seed where only one of the original has been among scores of others, showing that the fertilizing principle of the original or simple kind is far more easily communicated than that of the latter or more removed sort. The first position I have proved, year after year, with the Pansy, or Heartsease: for, after placing none but first-rate kinds together, such as it would seem impossible to beat at the time, and so far as I could observe, with great diligence exterminating everything at all inferior, I had, in spite of my care, about two per cent. of the original weed, as perfect as ever the original weed was, before the Heartsease was "elevated to the rank of a Florist's flower." Secondly, I one season begged some pods of seed from a friend's bed of seedlings, in which he had allowed some very few of the originals to remain unmolested, and I took the seed from the best flowers in the bed. In the next season, when the seedlings came up, I feared there was but little good among them from their foliage; and when they bloomed there was not only nothing worth keeping, but a very large proportion, indeed, were nothing but what I had been expecting from their foliage—a complete return to the original weed. Here, therefore, it was manifest that from picked seeds, taken from the best flowers in a large collection, with scarcely half-a-dozen of the weeds among them, such is the disposition to degenerate, (if I may be allowed the expression,) much the greater part had gone completely back. For years have I repeated, or caused to be tried by some other person, these and similar experiments, and invariably with similar results. Proceeding from the Pansy to the Dahlia, I, like many others, anxious to raise all the seedlings I could, began to save seed from a general collection. Once, in my own place, and among friends, I raised and bloomed six thousand in a season. In my own place, the instant I could discover a single flower, long before it opened, I forked it up; and as soon as I could discover a semi-double one, or discover in any way that it was useless, I served it the same way. In this manner I got rid of all that were mischievous to the rest; but, alas for the remainder! there were not more than a dozen out of two thousand that I thought worth planting again, and this, too, at a period when anything full and double passed pretty well. But I had seen the Spring-field rival, and nothing short of that would satisfy me, so I need hardly say I remained dissatisfied. But the stocks at my two friends' were not served so cruelly; single and semi-double were alike preserved, so anxious were they that I should see all, that no one was permitted to remove a leaf; and it was enough to sicken anybody to see such a batch of ugly-pointed single and semi-double flowers. About half-a-dozen at one place, and twice as many at the other, were marked to try again, and the rest dug up and put in a hole to rot. But my friends, anxious to get a little seed, had picked the pods off those marked for further trial; and I had saved seed from my few, resolving to try them separate from the seed of the general collection; I did not raise more than a hundred plants the next year from seed of the selected seedlings, and about two thousand from the general collection. The large lot were fully as bad as the previous year's, nothing above an average middling flower, and not a dozen of those; while there were full one-third of the hundred perfectly double, some passable. I went to look at my friends' luck, and neither of them had a double flower, nor anything approaching it. Here, then, it was again manifest that the disposition to go back to the simple flower is so great, that two-thirds of the seed saved from double varieties, without a single one near them being permitted to open, produced only the single and semi-double kinds, while those saved from double flowers among single ones had not a double one in the lot. But it may be asked, how it comes to pass that in seed saved from the general collection so many went back, as to leave hardly a score in two thousand? This is easily explained, and the explanation confirms the same fact—the disposition to return to their original form and fashion. My general collection contained all the best flowers in cultivation, and all the new flowers advertised. Now, the new flowers of that day were, for the most part, exceedingly bad, three-fourths, indeed, worthless; but one does not feel inclined to throw away half-grown plants without a full and fair trial. I, indeed, have so often seen a good one play tricks, and bloom half-way towards single a whole season, that, of course, I let every new one take its full chance; and in proportion to its ill-behaviour took pains to develop its good qualities if possible. These single flowers, then, although they formed no kind of proportion to the large quantity I grew, were, nevertheless, enough to quite settle the quality of the seed saved from the best.

Nothing, then, can more clearly demonstrate the fact, that every thing like a flower removed from its simple state, by cultivation, has a strong tendency to return to it, not only when there is no proportion of the original or simple kind near it, but also, when so far as our own ingenuity and diligence can be exercised, every thing even at all like it has been removed. In the carnation and piccotee, I have seen seed saved from a large collection of show varieties, with, of course, not a single flower among them, produce hardly any but single flowers, and many among them with serrated edges, and as wild as needs be; while from a pod of seed saved from one solitary piccotee of the yellow ground kind, when there was not another in the whole garden, there were seventeen plants, and only three single among them; these were however, all but one, deeply serrated, a quality, or rather deformity, belonging most especially to the wild or single flower. I have had the auricula, both from seeds of my own, and seedlings purchased by the score, in a small state, and it will hardly be conceived what a number proved the original "Bear's-ear," and "*Grand Present*," while others were hardly a remove from them, and scarcely one had property enough to save it from the dunghill. I have seen thousands of seedlings at Guyott's and Dickson's, years ago, and where they had one advance, they had five hundred go-backs from the sorts they were saved from. I do not know an exception in any flower that has been materially improved from its original simple state, to the disposition to go back; I am sure I have seen tens of thousands of polyanthuses raised from seed, and never saw one in a thousand that was not worse than the parent, when the seed was saved from flowers in a general collection; and, indeed, when we recollect how few polyanthuses there are at all esteemed, and how little they have advanced, although hundreds of people raise them, we need not doubt for an instant the care and watchfulness, the interest and excitement, that are required to keep up, not to say advance, the qualities of Florists' Flowers. The reason, then, why Florists' Flowers do not advance more rapidly are chiefly these: 1st. The disposition of flowers to go back, instead of advance. 2dly. The practice of raising from seed indiscriminately gathered from flowers grown in great collections. 3dly. The carelessness evinced by great dealers in so saving all their seed. To these causes may be attributed the slow pace at which floriculture proceeds, and this will enable us to judge why amateurs succeed better than large dealers in raising good seedlings. The amateur's ground, if not his means, is generally limited. This limitation necessarily curtails the extent of his collections. The small number he can grow makes him choice of his varieties, and enables him to pay the more attention. He saves his seed from the best among a small choice collection, and he reaps his reward in the recognition of a flower better than he has, or as good, and new in some feature. With all his care, however, he throws away nine out of ten, nineteen out of twenty, or it may be, ninety-nine out of a hundred. He finds a customer in the nurseryman, who cannot, for the life of him, improve his breed, because he is obliged to grow large collections, and the seed saved from large collections will not give him a good one in a thousand, and sometimes not in ten thousand. Why then, it may be asked, why then does floriculture not advance more rapidly, when it is shown that amateurs can and do advance it? The answer is very plain, easily understood, and not to be gainsaid. It is because even amateurs who raise seedlings are comparatively few, and too many of those who do are not sufficiently careful. Having found, according to my notions, the cause of which all friends to floriculture must regret the effects, I shall propose a remedy, and I trust I may make this feasible to people of moderate understanding, and induce those whose means enable them to pursue it, to go at once into the most delightful branch of floriculture—the improvement of the races. I close this part of the subject only to begin the other, and most important part, under the head of

HINTS FOR THE IMPROVEMENT OF FLORIST FLOWERS AND PLANTS.

I WOULD rather depend on an amateur who had no flowers to begin with, than on one who had a collection, for the seed which would be likely to produce improvement, because I could dictate the sorts he should grow, and from which to save it; and I know hardly any flower in which his services are not absolutely wanted. Let any one select his flower, and suppose he commences with

THE TULIP.

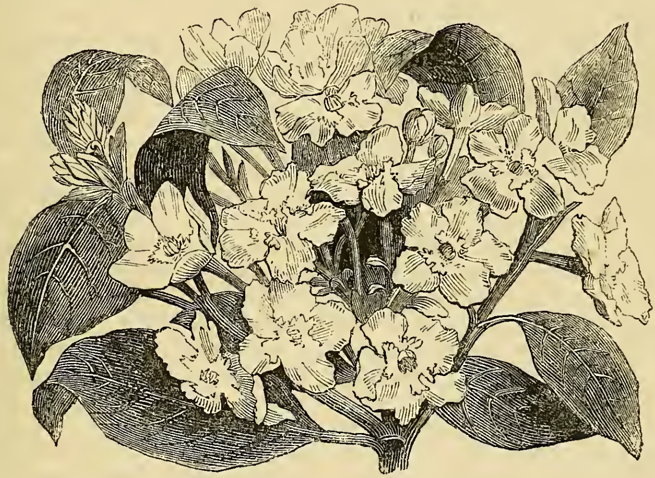
LET him grow away from his bed altogether, or if he have no bed, so much the better, a few kinds, every one of which should be selected for some excellent property: say that Rubens is selected for its colour; Siam for its thickness of petal and approach to form; Polyphemus for numerous good qualities; Pomp for its rich yellow ground, though bad form; Rose Ceres Belle Forme for its clearness, and Sac for its colour; Charbonin, Salvator Rosa, Triumph Royal, and such others as have perfectly clean bottoms, distinct colour, and thick petals. Let not a doubtful one of any description be admitted. Siam and Ceres Belle Forme are often doubtful in their ground colour, and some seasons they will not lose the tinge of yellow, but these are too good in other respects to omit; Rose Catherine is a beautiful colour, but its foul bottom would, perhaps, spoil the whole batch; sow these in an open situation, as many of each as you like, and let them be crossed by the bee, or if they do not in a few days show signs of having been inoculated, cross them any way, no matter how, for no crosses could be bad. Much is said by Tulip breeders about saving seed from unbroken Tulips; others have boasted of crossing by hand, or artificial impregnations; but I have seen the produce of such crosses, and have observed nothing to tempt me to follow the example. I have also known a wise person to pretend that a Tulip newly broken has been from a cross between this and that, only because he fancied he could trace the character of these flowers. The most successful have never crossed them at all, but let them cross themselves, or rather let the fly and bee do the work. But suppose you prefer impregnating each Tulip with the pollen of one of your own selecting, this is the way to do it; when the anthers burst, take a pair of pincers, and pull them off their stamens, and rub the powder all over the upper crown of the pistil. This done, remove the anthers from the one impregnated, and apply them to another kind; and so, if you please, you may go the whole round of the flowers, changing them in various directions, and leaving all of them without stamens. It will soon be seen which have taken and which have not, by the decay of the petals and the swelling of the pods. Now let them take their chance, for as soon as the operation is performed and impregnation perfected, they should have all the weather. Here they may remain till the stem turns yellow, when the pod having got all it wants from the plant, may be gathered, laid in the sun on separate papers to dry, and then be hung up with their pods in a paper bag, in case they should split. Now supposing this seed, or any one or two pods of it, perfect itself well, a hundred grains of it would be worth a peck saved in a garden where a general collection is grown; and the chances are, that they break into varieties sooner, and some, bloom variegated from the first. But this is not all; you are not to wait till they break before you discard the worst. Sow your seed in pans or boxes of loam and leaf mould about November, and put them in a cold frame, where they will get no frost, and can have both sun and air. They must never get dry after they are sown, and must be just covered with the soil and no more; at the same time they must not be wet, because they would in all probability rot. In the spring they will come up like young onions, and must be occasionally refreshed with water, air, and sun, except when very hot; in this way they will grow pretty fast through the spring, and die down about June or July. The little bulbs will be found the size of peas. They may be kept in a dry place till the end of September or the beginning of October. They may then be planted in a prepared bed of the same stuff, made inside a common garden frame, the mould being filled in to within four inches of the light, the bed being sloped like the edge of the frame; here they may be planted in drills an inch deep, two inches apart in the drill, and three inches from drill to drill. Give air and rain when the weather is mild; protect well against frost, for it would do mischief with such small bulbs. They will be up early in the year, and you must then be doubly careful of the protection against hard weather; they cannot have too much air when it is mild. In this way they will go through another growth, and when the leaves have quite died down, they may be once more taken up. This second season you will find to some of the bulbs small offsets; wherever this is the case, put each, with its offset, in a bag. So also you must whenever you find one with what is called a drop root, that is, one root below the other; a very common case in seedlings. The next year you may prepare your bed in the open ground, and plant each sort three inches deep, and the same distance apart in the rows, across the bed, and have the rows six inches apart, that they may be easily cleared of weeds; when you come to the bulbs which have offsets, you must put them close together, and increase the distance to four inches, to prevent mistakes in the taking up. This may be hooped over very shallow, for the nearer a cover is to the ground, the warmer is the air kept. The object of this is to cover against frost. They may have all the rains after February, but still no frost. In the summer, when the foliage is once more dead, they may be taken up with the same precaution as regards the offsets and sunk roots, for many will be found to throw down another root, or to generate an upper one on the surface, or near it. The object of keeping every bulb's offsets to itself is, that when the old one blooms, you may calculate on how many of the sort you have to keep or throw away, as the case may be. The fourth season plant them out of doors in the same kind of soil, and six inches apart all over, still keeping the bulbs with their offsets in the same hole. This fourth year many will bloom, therefore the covering against frost, and all the proper care must be observed. The fifth year all will bloom, and as they bloom, throw away every one that has a foul bottom, all that have narrow, thin, or pointed petals, and throw all their offsets away with them; do not allow a badly formed Tulip to remain, if the colours be ever so good, for we have already many fine colours and bad forms, while the Tulips which are alone to be desired, are those which are improvements. When seedlings first bloom, the majority come of a self colour everywhere but the bottom, which should be pure white or yellow, though if all of one shade, any colour between white and yellow is sufferable, and indeed, in some cases novel and handsome in a bed. It would soon be seen how very much superior would be seedlings raised under such circumstances, compared with those raised from, no matter how good, a flower among a general collection. Such is the disposition of the Tulip to degenerate to foul bottoms, pointed petals, thin petals, narrow petals, and long cups, that even with all your care you may have to discard three-fourths of your seedlings when they first bloom; for you should not save one of an inferior form, or with one of the faults I have mentioned. Your seedlings thus reduced in number, (for you throw away all the offsets, as well as the large roots of those that are good for nothing,) may be planted out from year to year, keeping each sort distinct, using by no means starveling sorts of compost, but never using dung; a florist's flower, no matter what its character, is better grown in rich loam and leaf mould than anything else that can be found, and next to that cow-dung, which when reduced to mould is very nearly of the same nature, as the animal lives almost entirely on green vegetable food; and indeed the only cow-dung that ever should be depended on, should be gathered up from pastures where they feed, and not be had from the cow-yard; all the dressing therefore that the soil for Tulips requires is leaf mould. These selfs or seedlings should consequently be planted from year to year with the same care as broke flowers, and they will mature themselves, and break into colours from time to time. When you have to look chiefly to the colours, you may have them break into fine, well-marked flowers, with the six petals nearly alike, but they may also break into an irregularly marked flower, blotched or patched, and defective in all respects as to the marking. If, however, the bottom be clean and pure, without a stain, and any part of any one petal be cleanly marked, do not throw away that flower, for in our best beds so many splendid varieties occasionally bloom foul, that we might throw away whole collections; when, therefore, you see one kind breaking imperfectly, merely plant that sort the next year in a row by itself, as a partly broke variety, and do the same by all others that so break imperfectly; you will doubtless be rewarded by an occasional fine flower, that will be identified with your name, as Polyphemus, the best Bizarre we have, is with that of Mr. Lawrence, and none can desire higher fame as a florist; but if you follow my advice in the saving of the seed, you will be more likely to produce a number of fine new flowers, than he was to produce that one, because Mr. Lawrence had thousands of flowers growing, as he had every variety he could obtain, until he had proved them not worth the trouble; his thousands of seedlings were raised under the disadvantage I have mentioned, and against which I would have you guard; the disadvantage of the very first flowers being inoculated by bad ones, and thus reducing your chance of an improvement to one in ten thousand, instead of one in a hundred. I have now given you a few hints founded upon practice and close observation. I may mention two or three circumstances to illustrate the observation. I once saw nearly three hundred seedlings from a Charbonnier noir, without one clean bottom; more than six hundred from a Siam, which had but six clean flowers, and those very poor, and in both cases there were Roses, Byblomens and Bizarres; though saved in the first instance from a Bizarre, and in the second from a Byblomen. And not many years since I saw a quantity of seedlings, said to be from Captain Lampson, and sold at the mart as such, and not one turned out clean, although many were enough like the alleged parent, both in growth and flower, to induce me to think the parentage was properly described. I mention these things to show, that by saving from good flowers you have done nothing towards obtaining an improvement, unless you prevent any but good flowers from inoculating the parent.

So much has been written and said of the Tulip by persons wholly ignorant of its nature, that I can hardly abstain from saying a word or two on its general culture. It is so necessary to have clean loam, free from grub, wire-worm, or other pests, that you cannot be too particular in the selection; but it is an absurdity to suppose that the Tulip requires poor soil; on the contrary, it would grow in the highest perfection in half good and rather sandy loam, and half leaf mould. Perhaps the finest bed I ever saw, and I bloomed it myself, was grown in mould formed of turfs cut for making a lawn, which turfs had been rotting for two years in a heap, and I consider that the rotted grass and its roots formed about one-half, and the soil with them formed the other half; these turfs were rotted enough the first year, but in chopping them down I found many wire worms, and probably they were turned over a dozen times by boys, to whom I paid a halfpenny a dozen the first time or two, and after then a penny, and the last time I believe I went so far as to promise sixpence each if they could find any more. This stuff proved the best I ever knew for the growth of the Tulip, and I never saw a cleaner, finer growth, nor a much cleaner general bloom than was produced in that stuff. Nobody, however, can deny that it was exceedingly rich; and though a Tulip, like many other flowers, does not like raw dung, it is against all rules and practice among good growers to starve this queen of flowers. Empirics have written all sorts of nonsense about breaking Tulips; I say, grow them well and they will break themselves. F. H. S.

ON THE CULTURE OF THE NEAPOLITAN VIOLET.

This lovely, humble little plant, possessing, as it does, a property which makes it a very great favourite of every admirer of Flora, is one that ought to have more attention devoted to it than it has. Seeing an inquiry as to the best mode for forcing the same, I beg to tender the following remarks:—One of the principal objects to ensure ultimate success, is to provide good strong healthy plants, for planting at the proper season; thus I shall briefly consider the best method of propagation. It will be found highly advantageous to every one interested in Floriculture, young gardeners especially, to acquire a thorough knowledge of physiology, the natural structural organization of every species of plants; for although we can and are able materially to assist nature, yet nature herself, if duly watched and studied, will afford us some important and invaluable lessons. In propagating the Neapolitan Violet, I will presume the cultivator has in his possession some established plants. These, at the end of March or beginning of April, should have a small portion of light loamy (rather sandy) soil sifted over them, to give the shoots or runners an opportunity of forming and emitting roots, which they will readily accomplish; if thought necessary, a little more of the same mould may be sifted over them the second time, it being advisable not to cover the crown of the plants too much in the first place, but to add more if required. As they advance in growth, if the weather should prove dry, a little water will be indispensably necessary, as it will greatly accelerate the growth and formation of roots; but at this season it must be somewhat sparingly applied, it being better to keep them rather too dry than too moist. In about a month or six weeks, the runners will have formed themselves into plants, which may then be disunited from their parent plant, and planted out on a bed previously prepared for them, formed of the following compost (*i. e.* if the soil be not naturally good and suitable): maiden turfy loam, from a common or old pasture, well decomposed; half of well pulverized rich yellow loam, one-third of thoroughly decayed rotten manure from an old hot-bed, and a third of leaf mould. Many mix their compost some time previous, being used so as to become well incorporated; but my practice is, to have my soils, &c., well decomposed by exposing it to all weathers, and mix at the time of using. I believe the old practice is more generally repudiated in the present day. The compost being well mixed and prepared, beds should be formed in an open situation, if possible, under a wall of north aspect, shaded by no trees, or anything that would cause the plants to grow weakly, (the great object is to obtain strong and stocky plants); the beds may be raised from six to eight inches above the surface of the subsoil (if I may so term it), thus, in some measure, depending on the nature of the subsoil or treating; if it is dry and sandy, it must not be raised much above the surface; if *vice versâ,* it should be elevated by all means; the beds being ready for the reception of the plants, they should be pricked out, from eight to ten inches apart; give them plenty of room, taking care to keep the roots as entire as possible. When the planting is completed, a liberal quantity of water may be administered by a fine-rose watering pot, and shaded for a few days from intense sun, until they become established a little. Attention must be paid to the watering in very dry weather; also to shading, when the sun is excessively powerful, at the meridian of the day, throughout the summer; the more they can, without injury, be exposed, the better plants they will be likely to make. During their growth in this situation they should be looked over, and any straggling shoot that might be made, pinched off; also thin and regulate, should there be an over-abundant number; they will require no other care, farther than to stir the surface, keeping it clear of weeds, &c., until the latter end of August or beginning of September, at which time they must be finally moved to their winter quarters for the production of their lovely flowers, fulfilling the design of a good and gracious Creator. It is the practice of a vast number to make choice of an old melon or cucumber bed, to grow them on finally, but, for my own part, I prefer making a bed for the express purpose; I make choice of old linings, and should that material not be sufficiently dry, I spread it, exposing it to the full action of the sun until it is rendered perfectly dry, fit for use; I then mark out the size of the frame, and build the bed about two feet and a half in height, beating it firm, as the process goes on; when within a foot or so of its desired elevation, I lay, on an even surface, drain earthenware pipes, from four to six inches in diameter, the number required to be used depending on the size of the bed, to conduct the heat from the linings into the interior, so that the temperature throughout the bed may be equally the same; although I prefer the above pipes, wood of the same size may be used, and drawn out before the application of the lining; or holes may be perforated at the option of the cultivator; probably he might meet with as good success by adopting the latter as the former. Having thus prepared the bed, place on the frame (which should be rather deep than otherwise), add from two to three inches of rough turfy loam, then near about the same of ground bones and charcoal, mixed well together; this stratum will afford a good efficient drainage, which is very essential to their welfare under artificial cultivation, as they are very impatient of local moisture to excess, being indigenous to dry banks, where it is soon carried off by evaporation, &c. Having proceeded thus far, the same compost may be used as recommended for them after they were taken from the old plants, with the addition of a small portion of peat and very coarse sand, well mixed with the forementioned compost;

fill in to the depth of from two to three inches, on which place each plant (carefully lifted with ball entire from the border), at equal distances, say about six inches apart, or a little wider—it is better to give them plenty of room; the frame being filled with the plants thus placed, add of the same compost sufficient to cover the ball of each plant, gently pressed with the hand in the progress; this done, give the whole bed a moderate watering, and shade them from hot sun until recovered from their removal; protect from rain, cold winds, and expel frost by well matting them up in all severe weather, and to keep the temperature averaging at from 40 to 50 deg., although the nearer 45 deg. the better; admit plenty of air at every opportunity, *i. e.* in clement weather; in watering be careful not to wet the foliage, let it be about the same temperature as the heat of the bed, rather below than above. Administer somewhat sparingly, particularly during the dark damp months of autumn; if the above is adhered to, the Violet, a boon from heaven, may be had in perfection throughout the dull, dark months of winter, cheering the heart of those who love nature and nature's God, whose works are truly wonderful. —*G. Fry, Blackheath.*



LUCULIA PINCIANA, OF HOOKER.

MR. PINCE'S LUCULIA.

This splendid new plant was raised from seeds received from Nepal, by Mr. Pince, of the Exeter Nursery, after whom it has been named, by Sir W. Hooker. With something of the general character of Luculia Gratissima, it unites a much stouter habit, larger clusters of flowers, and a more powerful fragrance. It is botanically distinguished from L. Gratissima by five pair of little prominent tubercles, which are situated one at the sinus of each lobe into which the corolla is divided.

L. Pinciana is a shrub, with numerous opposite branches, and large ovate entire leaves. The flowers are arranged in large spreading cymes, at the extremity of small leafy branches; several of these spreading out, and almost uniting, form a grand compound cyme, or immense head of flowers, a foot or more in diameter. The flowers, individually, are white on the inside, changing, as they become old, to a cream colour, tinged with blush; outside they are deep blush; and the long tubular portion is red: they are, moreover, powerfully and deliciously fragrant. It has been cultivated in a green-house.

There can be no doubt, as this plant has been cultivated in a green-house, and is a native of Nepal—looking, too, at its robust habit, that it will be found equally easy of cultivation as its better known ally; and if such should be the case, it will, most unquestionably, prove a very great acquisition to our gardens. We have no doubt but that young plants, raised annually, and flowered in succession, will produce much finer and richer coloured blossoms than older plants; but nevertheless, a large old plant, well furnished even with bunches of blossom much smaller than ordinary, would be a most attractive object. The special points of its culture would be, to place it in well-drained pots of free, open compost, and to afford it rather a close and moist atmosphere in the early stages of its annual growth, which might afterwards be matured in a warm green-house, and would subsequently produce its lovely blossoms.

THE DOUBLE SWEET WILLIAM.

Of late years there have been many of this dwarf flower raised which proved double, or semi-double; and some of them have shown that a good deal may be done with it, even as a florists' flower; the colours are very much diversified; the flowers form a good truss; the plant bears a large proportion of bloom, compared with the foliage, and most of the fundamental requisites for a general favourite already exist in the plant. It is a much more complete, though rougher subject, than the pink, for each individual bloom of the Sweet William is circular, though much serrated. What may be attained hereafter in the way of mules by crossing it with the pink, or whether any thing of an improvement could be produced by any of the pink properties, have yet to be learned; but if we could get rid of the serrated edge, which is not worse than the single pink used to be, and indeed is now, we should make a great advance. There are already some handsomely marked flowers worth perpetuating, and some persons already cultivate their favourite selections. I saw last season a few excellent double Sweet Williams at Hampton Court, in better order, and the plants more handsome, than if they had been raised from seed, and they had been propagated as pinks are propagated, from the side-shoots. There were some of the varieties which reminded me of a double Indian Pink, they were nearly as large, and quite as handsome, but in the Sweet William we have a quality which I value much—the flowers come in large handsome trusses, or heads, and might be shown in varieties the same as dahliahs, verbenas, and other subjects; but this should not be allowed with seedlings. The encouragement should be given to double flowers only, or to single flowers only, and not to a mixture; and the flowers should be valued more or less as they approach a given standard. I will take the present acknowledged standard of the pink, except as to the lacing, for a double one, and the verbena for the single one, because in a flower capable of so much, there should be great latitude for the markings, and I am not quite sure that this subject, coming in trusses, would be any thing behind many other florists' flowers; I think, too, it would have an advantage which some other flowers do not possess, that of having both double and single varieties showable, for as yet I see no reason why the one should not be as perfect in its way as the other. The ordinary properties, however, which to a florist of taste may be considered settled as to leading principles, such as roundness, smoothness of edge, thickness of petal, and compactness of truss, will strike any body as being especially the points to look after in this matter; and with regard to the double ones, the regularity of the petals would be an additional point. I leave this subject to others, rather than say much more about properties myself. At all events, I wish those who are curious would begin to take pains with this flower in various ways. I would have them try all sorts of crosses, beginning with good showy kinds, and see what can be made of it by these means; I would have others, when they meet with a good handsome variety, propagate it from cuttings or side-shoots, and save the seed from it. Let any one, from this time forth, take from his very best varieties the side-shoots, as soon as the plant is in bloom, and they are large enough, and give it a name. It has been hitherto prized more or less as it approached a deep scarlet and black, and I think it just possible that when any official publication of necessary properties shall appear, I may find it decided that clear fine selfs shall be placed at the head of the list; for on looking to most of them, there is a speckly surface, even to dark ones, as if dust were sprinkled evenly all over the flower. As, however, size cannot be left out of sight, on this occasion, I think I may safely recommend those who intend to commence growing them to choose in the first instance for size, because we must get them out of their present limited sphere. I feel quite confident that the Sweet William may be got fine enough to rank with florists' flowers; and having awakened a few industrious florists to the importance of the subject, I shall leave it in your hands, hoping to see in the Horticultural Magazine a proper set of regulations for the judgment of persons who are to estimate the value of novelties, because it is of the highest importance that at the very commencement people should know what to keep, and what to throw away, that no time may be lost in the first few seasons by valuing the wrong kind, or by the differences of opinion which, without some early guide, are sure to arise among the cultivators, each of whom will be for maintaining that any peculiarity in his own flower is a valuable property. Z.

ON THE CULTURE OF THE ACHIMENES.

"Who loves a garden loves a green-house too—
Unconscious of a less propitious clime,
There blooms exotic beauty, warm and snug,
While the winds whistle and the snows descend."
Cowper.

All lovers and cultivators of flowers must hail with delight the introduction of a new plant, as an addition to those numerous stars of earth that enamel our meadows, that stud our hills, and that adorn our gardens and green-houses; and no stranger could have met with a warmer reception than that beautiful race, the Achimeneacs, that are now, with their verdant foliage and bright blooms, vieing with other green-house gems; for most interesting favourites they have proved themselves to all who have made their acquaintance; those who have not should lose no time in doing so, as they will find them a most invaluable and highly interesting acquisition, adorning the summer and autumn months with their rich profusion of varied-coloured flowers. They only require to be known to become generally grown; for both the amazing rapidity and facility with which they are increased, place every one of them, whether of ancient or of recent introduction, within the possession of all, at a very trifling expense.

Those who have green-houses will find them most useful, to replace the more hardy plants that have been turned out to invigorate themselves in the refreshing gales and reviving showers of summer.

The following will be found, when well grown and tastefully arranged, to impart a richness to any collection of plants that cannot fail to attract the attention of, and delight the most careless observer of nature's beauties; these are Achimenes Longiflora, A. Grandiflora, A. Coccinea, A. Picta, and, I may add, Hirsuta.

These are the finest and most attractive, both on account of foliage and flowers. There are others, of recent introduction also; but the above will be found general favourites, producing a most brilliant display, from the truly beautiful contrast of colours, and the variety of ways in which they can be grown.

Those who are curious in growing them, and who have a good stock, may do so, as the Orchidaceæ, suspending them in the house, in pots with apertures in their sides for the plants to grow through, or in baskets, allowing their graceful branches to flow in rich profusion over the sides; in short, these elegant and ornamental plants are of such easy culture that they may be grown in almost any way fancy can direct; still, being natives of a warm climate, they will not do without the protection of glass, and they luxuriate in a warm, moist atmosphere.

As my object here is more immediately to treat of their pot culture, I shall confine myself at present to that which I have found, from experience,. to suit remarkably well. As for soil, they will grow in any free kind; the fact being, that they are not at all fastidious. What I have found well adapted to them is a soil formed of ordinary turfs, or a good old rich pasture mould, with one-third of white sand, one-third leaf mould, of a ripe old age, and a little well-rotted stable manure added to the whole. This season I intend to try the effect of guano upon them, in a liquid state, in the proportion of one ounce to one gallon of water; the result, I doubt not, will turn out satisfactory.

The plants, after remaining dormant all winter, should be placed under the influence of a temperature of between 60 and 70 degrees (Fahrenheit), and slightly watered at first, increasing the supply of water as they are found to grow. Any one who possesses a warm green-house or frame can easily start them; and having there formed their buds, they will bloom freely in a common green-house, or even in a drawing-room, during part of the summer and autumn.

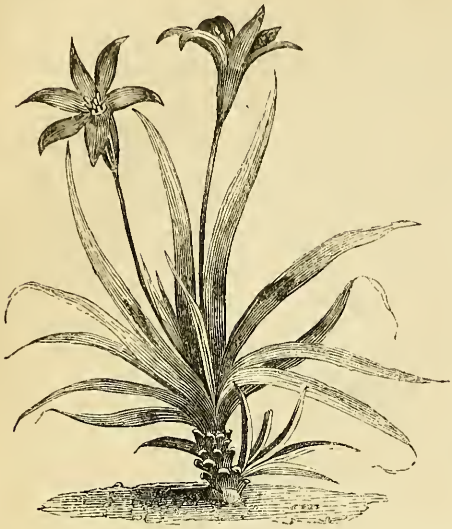
Different gardeners excite them at different periods; I think any time during February is quite early enough to begin to grow them. Some prefer starting the whole potful before separating and removing them; others carefully turn the scaly bulbs, or roots, out of the pots, and selecting the strongest, plant them, and then place them in heat; perhaps this latter mode is preferable, as it does not disturb the young plants, nor endanger their roots after they are started and have commenced growing.

In turning the roots out of the pots where they have passed the winter, it will be found that they are all formed, and cluster near the surface of the soil. Observing this, it occurred to me that the common pots were not quite adapted for them, especially when many roots were placed in the same pot, and that a pot might be made somewhat between a pot and a seed-pan; I therefore ordered some to be made four and a half inches deep, and eight and a half inches across the mouth, and some smaller, viz. four inches deep and six and a half across.

These pan-pots (so to call them) are not nearly so cumbersome and heavy as large, common pots, capable of growing the same number of plants, are more easily removed from place to place, have a more elegant appearance, and the Achimenes will be found to succeed in them to the most ardent grower's expectations.

Those who have a sufficient number of roots may produce a fine effect, by planting in these pan-pots roots of Achimenes Grandiflora and A. Longiflora, alternately; these two kinds growing about the same height, their different-coloured flowers contrast beautifully with the green foliage.

These pots are liable to the same objection as the common ones, that of being obliged to attach the slender stems to sticks; yet these supports may be well concealed by painting them black, and not having them too thick and clumsy. W. H.



BARBACENIA SQUAMATA, OF HOOKER.

SCALY-STALKED BARBACENIA.

A singular and rather pretty dwarf stove-plant, with long narrow leaves, and bright orange or scarlet flowers. The leaves are five or six inches long, and somewhat resemble those of a miniature Yucca; and the flower scapes rise solitary from among the terminal leaves. It was imported from the Organ mountains of Brazil, by Messrs. Veitch, of Exeter. A stove temperature is necessary for it, with a somewhat drier atmosphere than is often kept in these structures; it will also require a well-drained open soil, and to be rather limited in the supply of water at the roots.

HORTICULTURAL NOTES.

The Edible Fungi of Australia.—Whatever is employed as an article of food by any portion of the human race, becomes at once invested with an interest which no other consideration can attach to it. Viewed in this light, the lower orders of plants, and Fungi especially, become highly interesting. Here, in this favoured land, we cannot indeed estimate duly the feelings which they excite in the inhabitants of less favoured countries.

"Few orders of plants," writes Mr. Drummond, "appear to contribute more to the support of animal life than the Fungi in Western Australia. Many species, particularly of the genus Boletus, are used as food by the natives, and directly supply no inconsiderable portion of their support for several months in the year. I have often been surprised at the large number of Fungi that are eaten by almost all the marsupial animals. Of many species, I am satisfied that scarce a hundredth part escapes them; so assiduous are they in watching them, that of several sorts which are common in the ground, they rarely allow one to appear above the surface. They are directed to them apparently by smell, and the cracking of the ground over them; and dig them up and devour them, leaving only some fragments to tell where they grew; and several of our Fungi I only know from fragments seen of them in that way.

"The most delicious of our Fungi, for the table, is a plant nearly allied to Boletus. The whole plant is white; the lower part is farinaceous, like a meally potato; the shape of the upper part is irregular, generally angular, uneven above. It is common in a particular sort of land, but it is so eagerly sought by the fungivorous animals, that it was with great difficulty I could procure a few specimens. The only thing which generally remains to show where they have dug it up and eaten it, is a little of the white powdery part."

We have taken the above account from the London Journal of Botany, an interesting periodical, conducted by Sir W. J. Hooker. Perhaps the use of Fungi, as an article of human food, is no where, among civilized nations, carried to the extent it is in Russia.

Proper Soil for Dahlias.—Sandy loam, enriched with vegetable mould, such as an old pasture fresh turned up with the turfs in it, beats all the prepared earth or compost you can make for them. The decomposition of the turfs provides ample nourishment; blooms them clean; and grows them healthy and strong. There is, however, some danger in fresh pastures, for there are too many bots, and grubs, and wire-worms; so that the best way to prepare the place is to pare off the turfs and turn them over, for many of the enemies are destroyed by birds, and then care must be taken to pick out every thing of the kind as you dig up the soil, and the oftener it is dug over before the period of planting the better, both for the perfection of the soil, and the expulsion of vermin. It is not at all necessary that the grass should be rotted, for the fresh earth will do all that is wanted the first season: when dung is used it should be in moderation. The passion for large growth is a silly one; the moderate sized, compact flowers, brought forward with as little artificial means as possible, is the growth for us, for assuredly the Dahlia may be grown too large to be good; and, indeed, the plant may be grown too hard to flower until a late period of the season, and thus all the benefit thrown away, because the flowers when they come are no longer available. G.

The Clover Dodder.—Dr. Lindley, in a very interesting paper on this subject, in the Gardener's Chronicle, gives the following particulars:—

"As soon as the seed of the Dodder is ripe, it falls to the ground, and usually seems to lie dormant till the succeeding year. When the spring returns, the embryo sends one end down into the earth to form a root, and with the other it rises upwards, like a small white thread or worm. At this time it is not a parasite, but seems to derive its food from the soil, like ordinary plants. It cannot, however, do so long, but withers and perishes, unless it touches some living branch or stem. If it succeed in doing so, it immediately seizes the live stem by means of a sucker, which is protruded from the point of contact; and then, twining from left to right, and forming more suckers as it twines, it establishes itself on its victim, and ceases to have any further connexion with the soil. From that time forward it is a true parasite, feeding on the juices of the plant it has seized upon. After making a few turns round the branch, and securing itself firmly in its new position, it again lengthens, and catches hold of some other branch, when more suckers are protruded; and thus it goes on—branching, and twining, and sucking, and branching again—until it forms that appearance which Professor Henslow well describes as resembling 'fine, closely-tangled, wet catgut.' Now the Dodder has a new and independent seat of life wherever it has twined round a branch; and as it is incessantly twining and separating, and twining again, a single plant is speedily in the condition of a polype—so that if it be cut into a thousand pieces, each piece will immediately go on growing, as if nothing had happened to it. Tearing the Dodder to pieces, then, so far from extirpating it, only multiplies the mischief, instead of arresting it.

"This short statement will show that it is a formidable enemy that has been thus unfortunately introduced to our fields; and, as these things are not very nice in their food, it is not impossible that the Clover Dodder may next take a fancy to our wheat-fields, unless we can speedily put an end to its presence. It is of little use to cut it in pieces,—it is of no use whatever to do so, if the fragments are left where they can catch hold of anything else.

"As it is only an annual, it would be killed if we could prevent its flowering; but that is difficult, because of its hiding itself among the lower branches of plants, where it cannot well be seen: and a few heads of flowers will soon renew it in a succeeding year. The right plan would be to dig up the clover where the Dodder appears, so as to form a circle considerably beyond the patch apparently formed by it, and then to burn it in heaps; or, in cases where the entire field is infected by it, to sacrifice the whole crop, and burn it. This may appear a violent remedy, but it is the only one likely to be effectual; and even this will fail, if (which is not yet the case, but soon will be) the Dodder is allowed to form its seed; for they will fall on the ground, lie hid in the crevices, and reappear with the next crop,—when all the labour will have to be done over again."

Solution for Potted Plants.—On the authority of the Gardener's Gazette, which is, it would appear, a sworn foe to quackery, we are told that half an ounce of sulphate of ammonia in a gallon of water makes a solution that produces a most extraordinary effect on plants in pots; every sixth watering is to be made with this, and the other five with pure water—rain or river water is the best. Here then we have no about and about it; no "put a little" sulphate of ammonia; no "apply it occasionally;" no indefinite "pinch" of this, and "handful" of the other; no "twopenny-worth," that may be one quantity one day, and double as much the next; but a distinct unvarying quantity, and to be applied in a distinct manner. If it had been said, water once a-week with this solution, it might be when the plant only wanted watering twice a-week, and the plant might be killed from excess; but every sixth watering may be at times once a-week, at other times once in three weeks, but it presupposes that five pure waterings are only given when the plant requires moisture, and the sixth time it requires moisture it has the sulphate of ammonia. We are giving this without saying it is good or bad, except that, as the Gardener's Gazette so invariably denounces all kinds of quackery, and indeed almost everything in the shape of a nostrum, we think it would scarcely commit itself in the recommendation of any solution for plants of doubtful efficacy.

Tropæolum Brachycerus.—This delicate, and, so far as our notions go, very secondary variety, was nevertheless the cause of an angry correspondence in the public papers, between two parties, each of whom claimed the honour of its introduction. The mention of it in our treatise on that tribe of plants, accompanied with the anecdote, occasioned us to cut out part of that article; and in the confusion that was created, T. Brachycerus got coupled with T. Aduncum, instead of T. Canariensis, which we believe has other names, but is much like T. Aduncum in habit, though a smaller flower, and fringed much the same.—Ed.

Acclimatizing Exotic Plants.—Let no one imagine they will successfully acclimatize an exotic plant without paying strict regard to the circumstances of the plant in its native habitat, such in part as situation, aspect, elevation of site, temperature, humidity, time of flowering, seasonal changes, &c.

These circumstances must be all more or less studied by whomsoever would successfully acclimatize exotic plants. A plant may be a native of a country warmer than our own in some degree, yet if its native situation be a moist height, or shady mountain side, we should undoubtedly do wrong in placing it in a dry, hot, sheltered situation in this country.

On the other hand, a plant may be a native of a colder country than our own, yet if its native situation be a sunny, sheltered, and dry one, and its season of flowering late, it would surely be wrong and profitless cultivation in this country, to place it in a dull, damp situation; which, were we to look to the only one circumstance of its coming from a colder country we would naturally do. Again, a plant may be, or may seem to be, from such a cool or shady native habitat, as to feel our summer sun too strong and scorching for it, and accordingly require shading from its too powerful beams; while we must not, on the strength of that circumstance, conclude that the plant will stand our winter's rigour without protection. We must first learn whether it be a native of the northern or southern hemisphere; if of the latter, that will account for its inability to withstand our summer's sun at a season when, though it be summer with us, it would be winter with the plant in its native habitat; and its nature not being changed with its situation, it is only harassed by our summer's sun, at a time when it should have, and strives to enjoy its winter's rest; therefore it cannot withstand our winter's rigour at the season appropriated to it by nature for its summer of excitement. Were it not for this circumstance, there is no doubt that the half-hardy Sollya Heterophylla, Billarderia Longiflora, &c., would be among our hardiest wall plants.

These are circumstances the acclimatizer must well attend to ere he plant out a single exotic; and next, and of equal importance, the soil in which the exotic is placed, be its richness or poorness what it may, must be of an open, free, unretentive texture, and well drained. Such exotics, in general, as are natives of boggy or marshy places, can only be kept well over winter in felt-covered pits or frames, or at the bottom of ponds fed by springs. The plant must be started into a strong and rapid growth in spring and early summer, so as to have its growth completed and properly ripened before winter, when a covering of as dry and impervious a nature as possible must be laid over its roots, and around its base, or *life knot*, so as to exclude alike the frosts and moistures of our changeable winters. If the bole or branches of such plants receive any protection, it ought to be of a nature more to exclude moisture than air, which is often useful in the severest winters. By observing these simple and easy rules, I have never found much difficulty in having stout and abundant flowering specimens, of such generally considered greenhouse plants as Wistaria Sinensis, Maurandya Barclayana, Jasmines of all kinds, &c.; on various aspected walls, in many and cold parts of Scotland they do well for years, where others of a much more hardy nature, but differently treated, died during the winters these plants survived.—*John McDonald.*

Natural System of Botany.—To those who have not directed much of their attention to this method of arrangement, it may perhaps be well to explain, in a very brief manner, the principal divisions into which the vegetable kingdom are separated. First, then, all plants are either *vascular*, that is, containing tubes or vessels among their component tissue; or *cellular*, that is, composed entirely of cells. Then, again, vascular plants are either *exogenous*, that is, the stems increasing by deposit from the exterior; or *endogenous*, that is, increasing by internal deposit: cellular plants are *acrogenous*, that is, increasing by additions at the point of their axis. Again, taking another feature as the distinguishing mark, exogenous plants are the same as *dicotyledonous* ones, or those whose seeds are furnished with two seed-lobes, or cotyledons—if more than two, they are opposite; endogenous plants are the same as *monocotyledonous* ones, or those having but one seed-lobe—if more than one, they are alternate; and acrogenous plants are identical with *acotyledonous* ones, or those which, being without seed-lobes, grow alike from any part of their surface. Carrying this subdivision still further, exogenous or dicotyledonous plants are either *dichlamydeous*, that is, with both calyx and corolla distinct and present in the flowers, or *monochlamydeous*, that is, those which have but one of these present, and that called a perianth: again, dichlamydeous plants have three divisions;—*thalamifloral*, or those with distinct petals in the flower, inserted upon the receptacle, or base of the seed-vessel; *calycifloral*, or those whose petals are inserted upon the calyx, or outer covering of the flower; and *corollifloral*, or those whose petals are united, and not inserted on the calyx. Endogenous or monocotyledonous plants, are either *phanerogomus*, (a term which also applies to all exogens,) or those with their fructification visible and regular; or *cryptogamous*, those whose fructification is either concealed or irregular. Cellular, acrogenous, or acotyledonous plants (for they are but synonymous terms), are at once divided into three, four, or five orders; but the vascular plants are again separated into groups, having some remarkable characteristic in common; and these are again divided into distinct orders: thus we see that a *natural order*, is a group of genera (larger or smaller) agreeing in some important point of resemblance; and a *genus* is a group of species, having still more minute and particular relationship.

Thrip.—Mr.Barnes, of Bicton, recommends to take a peck and a half of soot, and put it into a hogshead of soft water, keeping it well stirred every day for ten days or a fortnight. This is strained through a fine sieve or piece of canvas, into a tub containing a peck of charcoal, and two or three lumps, or about three pounds of quick lime dropped in; in about two days it is strained again, and is then clear to syringe plants with. It will not only extirpate thrip, but many other troublesome insects; and is a famous liquor for syringing with, as it induces general vigour and healthiness among plants of all kinds.

Peas.—The Auvergne Pea is *one* of the best varieties, if not *the* best for a main early crop. Sown in company with the Early Charlton and Early Warwick, it is in bearing quite as soon, and is quite as prolific. It produces from eight to eleven peas in a pod, is of excellent flavour, and very good-looking. It is not suitable for the *very earliest* crop, as it is rather a strong grower.

Tree Mignionette.—To obtain this to bloom during winter, a few plants should be raised during the early part of the summer, and grown singly in pots with care, in a frame where they can have the full influence of the sun; they must be repotted as often as is found necessary, in a free open compost of sandy loam and leaf-mould, and all the flower-heads that appear during summer must be removed. In winter, they must be removed to a green-house, and will then produce plenty of blossom.

Cephalotus Follicularis.—This is the New Holland pitcher plant. It is usually kept in the cool part of a plant-stove, as it requires a very calm and moist atmosphere; a position among other plants where it would be partially shaded by them, and protected from fluctuations of humidity and temperature, is suitable for it. The plant being small and delicate, should be grown in a small pot, and this plunged within a larger one. A mixture of finely chopped moss, with a small portion of fibrous peat, and a few bits of charcoal, is a suitable compost for it; and it will be of use to add a few pieces of finely cut moss, closely pressed about the plants from time to time. A bell-glass is sometimes used to place over them, and in cases where they are liable to suffer from atmospheric changes this may be desirable, otherwise it is not necessary.

Camellia Stocks.—Mr. Barnes, of Bicton, in the Gardener's Chronicle, recommends Camellia Reticulata to be grown for stocks to enrich the varieties of C. Japonica upon, on account of its stronger growth. He also suggests, that itself would grow more vigorously, and keep in better health, if it were grown upon its own roots; the stocks upon which it is usually worked being, in his estimation, incapable of duly maintaining it.

Bouvardias.—These handsome flower-garden plants may be rapidly increased by taking the principal, in February, and cutting them into lengths of about two inches; they should then be planted around the sides of a sufficient number of pots and be plunged in a hot-bed. When they have sprouted, they may be potted singly into small pots; and being encouraged to grow in a warm house or frame, will make strong plants by May, when they should be hardened, and planted out into beds of peat soil. They make very handsome beds in sheltered situations.

Raising Lilies from Seed.—In the United Gardeners' Journal, we are told that Mr. Tillery, of Welbeck, has succeeded in impregnating and obtaining seed of the splendid Japan Lilies. There is usually some difficulty in this, in consequence of the stigma becoming viscid; and success in the present instance has been realized by opening the flowers when the buds were in a forward state, and fertilizing the flowers then, before the viscid secretion was formed which prevented impregnation. Mr. T. effected several crosses, and obtained a considerable quantity of seed, from which it is probable some interesting varieties may be raised.

Selection of Vines.—Mr. Tillery, a high authority on Grapes, recommends for an amateur, or gardener who has but one house, and who wants the greatest quantity and quality of early and late grapes, through the season, the following varieties in a house with fourteen rafters:—one Purple Constantia; one White Frontignan; one Royal Muscadine, or Chasselas D'Arboyce; three Muscat of Alexandria; three Black Hamburg; three West's St. Peter's; and two Black Prince.

Potatoes.—A controversy is going on about planting potatoes, and a question is asked, whether it is possible that autumn planting can be so good as spring planting? This may be settled by asking another: Can you keep potatoes through the winter, and until the time for spring planting, without growing? If you can, spring planting will be as good as autumn; but if, as we almost always see, the tubers shoot, and on opening a pit bushels of the white shoots may be found, the tuber cannot be so strong as if it had not shot or grown at all; therefore one essential being the retaining of the whole strength of the tuber for growth of the planting, we say it matters but little what is the period of planting, so this necessary condition be secured. But certain it is, that one half—perhaps nine-tenths of the disease in potatoes, and failure of the crops—may be attributed to the condition of the tuber when planted, and not to the season of planting, nor the nature of the soil. The objection to autumn planting is the danger of early growth and spring frosts; but if the mildness of early spring bring them up prematurely, it is only required that a few hands be set on, to earth up the rows well, and cover the tops. Nevertheless, find a mode of keeping the tuber without growing, and then the later it is planted the better. Autumn planting, in some situations, is a choice of evils.

Ranunculuses. — It has been seriously recommended by a gentleman who has been supposed to understand the growth of these very beautiful flowers, that "fresh cow manure" should be stirred in water, "the thickness of thin pea-soup," to saturate the ground in which these roots are to grow. We shall always be anxious to caution young growers against dangerous practices. What may be the effect where there are no cows, and the manure must be brought from a great distance, we know not. The fly, which causes myriads of maggots to breed in cow-dung, may not be present in the neighbourhood, but it is the most dangerous and tempting invitation to hosts of enemies that ever man could think of; and he who adopts this plan, will probably have his collection destroyed. We say again, it may not be fatal under some circumstances, but it is one of the old nasty plans which may be coupled with the delicacies recommended in old Auricula books for the culture of that flower. We doubt much if there be anything better than thoroughly decomposed cow-dung; or anything much worse than the same article while new or fresh.

Self-Manuring.—At the Derby Arboretum I observed the mowings of the grass swept into the little circular bed which each tree stood on and there it was left to rot, and other mowings were swept on half-dried or decayed grass of the sweep before. I wanted to know the reason for this strange practice, and was told that it was always intended for the Arboretum to manure itself. I said I thought it a very dangerous plan; that being thus choked up with decaying vegetable would kill many things; and I pointed out a number that were dying or dead, not by any sudden cause, for there was canker and mildew, and every symptom of ill health and gradual decay. The man said the instructions were positive, and at the fall every tree had its leaves swept together round the stump, and there they decayed; and he added, "it's the most natural manure, and all they get in their native forests;" but I asked him whether anybody took pains to sweep the leaves from where they did some good, into heaps round the stumps, where they did no good; and also whether he considered the rotting and fermenting mowings of the grass were at all akin to the leaves of the trees themselves? He evidently had not his lesson perfect, but he fell into a sort of conclusion—"Well, sir, them's my instructions, and I've nothing to do but follow 'em;" after which I merely requested him to turn over the apparently half-dry grass in one of the clumps. The bottom was soddened and close, perfectly impervious to air, and completely shut it away from the root of the plant. I said, by way of parting words, "when I call again, the plant and twenty more will be dead, if this pernicious practice be not discontinued." I called afterwards; I found it had been modified a little in some cases, for there were vacancies in the clumps. They were not quite covered over, but a good deal too much. If these things be for nourishment, rake them into a heap, and when they are rotted into mould, wheel them in and spread it over the surface.—*P. P.*

Training Heaths.—Mr. Campbell, of Warminster, trains many of his heaths into pyramids, which he places along each side of a wide path in his conservatory. The effect is somewhat novel, and in such situations very good. He merely selects a strong leading shoot, and keeps the remainder constantly cut back. The following sorts he has been successful with:—Erica Linnæa nova, E. Melastoma, E. Grandinosa, E. Laxa, E. Spumosa, E. Colorans, E. Colorans verna, E. Densa, E. Ventricosa breviflora, E. Nigrita, E. Sebana, E. Linnæoides superba, E. Sparsa, E. Persolata, E. Hyemalis, and E. Wilmoreana.

Propagation by Leaves.—This has been the subject of some leading articles in the Gardeners' Chronicle. From what has been advanced, it appears that, besides the leaves of succulent and herbaceous plants, such as the Gloxinias, Mr. Neumann, of the Jardin des Plantes, at Paris, has propagated Theophrasta in this way; and even when the leaf has been divided, both the top and the bottom end have grown. If such plants as Theophrasta, with rigid leaves and woody stem, can be multiplied so, there is no knowing what plants may not be thus increased.

CAROLINEA INSIGNIS.

This is one of the most splendid stove plants in the country. It grows thirty feet high; has leaves not much unlike the chestnut, but they are evergreen. The flower is a rich crimson, and the stamens are as numerous as those of a cactus, forming a rich feather. Loddige, in the Botanical Cabinet, says it originally came from Tobago, whence it was introduced by Dr. Anderson, of St. Vincent. It is, however, found in several of the West India Islands. The flower is twelve inches in diameter, and very grand in appearance. It is increased by layer and cuttings, and grows well in loam and peat, with ordinary stove culture. There are three other species, C. alba, C. minor, and C. princeps.

PRACTICAL GARDENING.

OPERATIONS FOR APRIL.—THE FLOWER GARDEN.

The Auricula.—This is a most important month in the culture and exhibition of the Auricula; the trusses of bloom rise, perfect themselves, and fade. Through all its progress it requires care and watchfulness. As soon as the truss begins to grow and develop its pips, they should be reduced in number, by taking out with small pincers those least likely to be perfected; but you must mind that seven being required for the exhibitions round the metropolis, and five in places where they are least particular, you must not reduce the number within one or two of what you require until the flowers are showing colour, and you can perceive which will be the most perfect. As soon as you can handle the pips to direct their places in the truss, some very fine moss should be tucked between the footstalks, to give all the pips room alike to open, for if they are left to themselves they will be crumpled, and their shape will be spoiled by crowding each other: the moss between the stalks can be made to throw back the outer pips, and thus give room to spread the inner ones. In trusses which originally show ten or a dozen pips, as soon as you can get hold of the smallest, and of any misformed ones, the truss may be reduced to eight; this gives you an opportunity of removing the least perfect on the day of show, if there be one at all imperfect; for a bad one, though sometimes retained to make the seven, should never be kept to make eight. The handsomeness of the truss could not prevent the condemnation of the plant, so that the loss of a pip out of eight, even if the plant, as a whole, looked the worse, must be submitted to; and, generally speaking, seven makes a more handsome truss. As soon, however, as the bloom trusses are ready for all these operations, they must be protected against the hot sun. This is best done with the transparent covering for frames; and when the flowers, from their rapid growth and opening, want daily adjusting, it is right to find them a warm corner, at least one sheltered from the north-east winds, and there place them on a table, with hand-glasses (propped up nearly to the edge of the pots) covering them: this is easily done with inverted flower-pots, of rather a smaller size. An ordinary full-sized hand-glass will cover nine plants, but if you have plenty of room, and glasses, they are better not crowded. All the plants must be examined daily, and the moss between the pips so adjusted as to make allowance for the expansion of each pip without touching any other. Of nights and days, they must be covered against extremes of heat and cold. In the daytime the transparent calico will keep off enough of the sun; and at night they must be closed with heavier material against cold, for a chill will fix the blooms, and prevent their opening flat. By watching the blooms, and keeping all the pips in their places, while they are growing and opening, they require nothing on the show-day but gently withdrawing the moss from between the footstalks, under the blooms, so as not to injure the delicate powder which gives beauty to this favourite flower, and the pips will naturally close together at the edges; a little adjustment of them in their places, so as to prevent them lopping over each other, will be necessary at the last moment. Water is to be given freely all the month, and especially to the blooming plants, while all offsets and small plants, though not so lavishly supplied, must nevertheless be kept moist.

Dahlias.—Remove plants which are large enough for planting into a cool frame, and be careful no frost nor cold winds reach them, for they are very tender. Continue taking off cuttings, and striking them in their single pots, if you have room; if not, a number of cuttings round the edge of a larger one. Take the tops off the forward plants, of which you require great numbers, and replace the decapitated plant in heat, to throw out its side-shoots.

Ranunculuses and Anemones.—Continue the protection of loose litter not only of nights, but in cold, raw, wintry days, of which there may be many yet.

Pinks and Pansies.—Stir the earth between the plants, clear them constantly from weeds, keep them well earthed round the collar of their roots, and see they are not allowed to want for water. Pansies will be throwing out strong side-shoots. These may be taken, now and then, from very choice sorts which you wish to propagate; they will strike under a hand-glass in the border, but may be hastened with a little bottom heat.

Sow Annuals both in heat, and in the open border; the slightest kind of hot-bed will be sufficient, as the heat will not be required long.

Plant out Wallflowers, Sweet Williams, Canterbury Bells, Rockets, Perennial Lupins, Larkspurs, and herbaceous plants generally, in the borders, clumps, and beds, requiring such ornaments.

Tulips.—Continue the greatest care of these delicate subjects, not allowing the frost on any consideration to touch the best bed, on account of the damage it does to the bloom, for the plant hardly feels the hardest frost, even when it reaches the roots; allow no weeds to spring up among them, and protect them against high winds, although a gentle agitating breeze does not by any means hurt them; cover of nights, even if the weather be warm, but they should be uncovered by daylight if the weather permit. Gentle showers will not injure them; on the contrary, if mild, it does them great service, and if the weather be dry and parching, be not afraid of syringing the foliage all over. If, despite of your care, the frost catches them, syringe them all over with cold water, and let no sun reach them till they are thawed. If the earth was not stirred between all the bulbs last month, it must be done directly; and if they have had much rain since it was stirred, so as to close the surface and make it run close together, it may be gently stirred again. If any of the foliage has a spot of yellow on it, or any appearance of canker, remove the affected part with a knife; for if the whole foliage above ground be cut away, there is more chance of the bulb escaping than if the canker was left on, for its increase until the very heart of the plant, and the bulb itself is rotted, is almost a certainty.

Piccotees and Carnations.—These must be potted this month in size sixteen, or twelve, or eight pots, according as you wish to have one, two, or three plants in a pot. The compost has been already described. The mode of potting is to fill the pots one-third full of crocks, rather sunk in the middle to form a basin; then put some soil over the crocks, about enough to make the ball of earth in which the plants are taken from their store pots stand, so that the upper surface may be level with the top of the pot; now take the plant, with its ball of earth, out of the small pot, by tapping the edge of it wrong side downwards, with two fingers on each side of the plants, so that the ball and plants will be bottom upwards, and the surface in your hand; turn this over gently, and put in the middle of the large pot, adjusting its height, so that the surface of the ball of earth is even with the edge of the pot, and, on pressing down, a little below it; fill up all round it with the compost, gently pressing with a small stick, so that it may be closed about the ball, but not rammed hard; give the large pot two or three taps upon the table to settle it altogether well, and before leaving them all, give a little water. These, if potted early in the month, should be put into a sheltered situation, and by rights on shelves, or stages formed of boards, placed along flower-pots turned wrong side upwards, in flat pans of water, to keep off vermin, which might otherwise crawl up the stage and eat the plants. If you have a proper stage, of course there need be nothing used but the stage. The temporary place proposed is only in case you have no regular stage. It has been said that pitch is a good thing to mix a little of with the soil. The inference is drawn from a fact which has been related, that when the sticks which are placed in the pots to train them up, are dipped in pitch, the roots mat round them so much, as to prevent their being withdrawn without dragging the plant or plants up with it; from this fact it is argued, that they have a great affinity or partiality for it, and that it would be worth trying a little in the soil, more especially as when the sticks are not pitched the roots do not go near them. We think it is as well to confine the soil to that which is well known to be good, at all events for the general collection, and limit experiments to a very few, and those of small value. Charcoal has also been recommended, and a few lumps of it can do no harm; but for the supposed operation of charcoal on vegetation, it is much more likely to be efficacious as a top-dressing. It matters but little what period of the month you choose for doing this work of potting, but as it is sometimes not done all off hand, the best way is to begin early, and in that case let them all be put into some shed the first few days, or under frames or other covering from the sharp frosts which frequently come during the month of April.

Roses.—If you wish to retard the blooming of these beautiful flowers, or part of them, you should cut them back to two eyes, after they have begun fairly to grow at the ends; many persons let half of their stock grow and bloom early, while others, by cutting back towards the end of the month, may be variously retarded so as to keep up a succession. They should be minutely examined for the grubs, which are too often at this season to be found among the opening buds, and if not detected early are sure to destroy the flower in embryo. If they are infected too much to keep under by any means, wash the whole with soft soap and water, and cut back wherever you can to cherish fresh buds. It is later than we should choose to plant roses; but when we have missed the autumn planting, which we hold to be far the best, we must do as well as we can. If there be any of the choice kinds mentioned in the preliminary number of this work not yet in your collection, make the best haste you can to procure them; and if they can be had in pots, they will have lost no time: if taken from the open ground, have the roots matted, and plant them with as little loss of root as possible.

Polyanthuses.—Treat these much the same as auriculas if they are in pots; but if in the open border, which is by far the best way of growing them, stir the mould up between them, and give a good dressing of leaf mould and cow-dung mould; take off dead leaves, guard all round the bed from slugs with some fresh lime, which will keep them away altogether; but the lime must reach all round, or they will be able to get to the plants, and they soon destroy them when there is a beginning made. The polyanthuses which a beginner might select are very few, but they are cheap. They have been mentioned before, but that is no matter.

Maud's Beauty of England.
Nicholson's Bang Europe.
Pearson's Emperor Alexander.
Buck's George the Fourth.
Crawshaw's Invincible.
Coxe's Prince Regent.
Bernard's Formosa.
Gibson's Royal Sovereign.
Collier's Princess Royal.
Clegg's Lord Crewe.
Cheshire Favourite.
Clegg's Lord John Russell.
Fletcher's Defiance.

And one or two newer ones than any of those, were shown at the Surrey Gardens.

Tender Annuals in Pots.—Balsams, Cockscombs, Egg Plants, Ice Plants, Tricolors, Amaranthus, and other plants, usually grown into specimens, must be shifted from the pots they were first pricked into to those of a size larger, as soon as the roots reach the edges, and must be continued in heat. If the first sowing has not yet been potted into single pots, let it be done at once, or as soon as they are large enough.

Pink Beds may, although it is highly improper to delay the operation so long, be yet made; but the greatest caution will be required to remove the roots whole, to avoid their losing the moisture by exposure, and to keep them out of ground as short a time as possible. The bed should be formed of rich compost; that is to say, rich in vegetable mould, or leaf mould as it is called, and thoroughly decomposed cow-dung, which is formed into mould also by decay. The pink always requires plenty of vegetable matter in the compost, and the more necessary does it become if removed so late. Pinks to get for the bed, if you have them not already :—

Garratt's Queen of Roses.
Keyne's Col. Baker.
Hodge's Melona.
Brown's Model.
Dry's Earl of Uxbridge.
Norman's Defiance.
Aker's Lord Brougham.
Collins's Majestic.
Unsworth's Omega.
Norman's Henry Creed.
Creed's President.
Garratt's Alpha.
Cousen's Little Wonder.
Wilmer's Duchess of Kent.
Leg's Prince Albert.
Weedon's Queen Victoria.
Wilmer's Prince of Wales.
White's Warden.
Smith's Dr. Coke.
Bunkhill's Queen Victoria.
Church's Romana, *alias* Rosiana.
Wilmer's Queen Victoria.
Hodge's Gem.
Holmes' Coronation.
Fairburn's Bob Laurence.
Neville's John Dickson.
One other of Neville's.

Pansy Beds may be formed by planting out the struck cuttings every fortnight, if the cultivator means to exhibit, for they go off sometimes awhile, and it is better to depend on several seasons of planting than on one. Pinks and Pansies ought both to be planted at least six inches apart, and not more than seven in a row across a four-feet wide bed.

Biennials and Perennials are sown this month or next, that they may acquire growth during the fine months; when they are large enough to handle conveniently, they may be planted out in nursery beds, to be strengthened and got ready for planting where they are to bloom, before the winter sets in, autumn removal being far better than spring—Columbines, Canterbury Bells, perennial Lupins of all kinds, especially the Lupinus Polyphyllus, Polyanthus, Auricula, Phlox, Sweet William, Wallflower, Rockets, Pink, Carnation, Piccotee, and Hollyhock, two-year Stocks, such as Brompton, Queen, Giant, &c., and all other biennials and perennials used in borders or pots. In all cases we make an exception to this wholesale and out-of-door sowing, when the seed is remarkably choice, and the loss of every one is an object; such, for instance, as Pink, Piccotee, Polyanthus, Auricula, Carnation, and such others as have been saved for the purposes of improvement in the races and exhibition. In such cases the seed and seedlings, though perfectly hardy, must be confined to boxes or pots, which can be placed in frames, and shaded when they require it, as well as protected from heavy rains or too much moisture. In ordinary cases, when they are merely for ornament in a common border, the loss of a few seeds is nothing of consequence, so that sowing and raking in will be sufficient.

Shrubs.—It is a late period to plant out shrubs, but if you have not already done all you want in that way, you must exercise your ingenuity to remove them as whole as you can. Many deciduous plants cannot be removed, for they are growing rapidly, and would flag past recovery for the season, if not actually die, with all the care that could be used; exceptions are made to every thing that can be bought in pots, and which can be removed at any time and in any weather, by taking the precaution of soaking the whole ground around them with water; but if they are turned out of the pot in dry weather, when the earth is parched, and merely watered in, as too many do such things, the parched earth around soon absorbs it all, and the plant suffers accordingly. It is well to do all these unseasonable movings after wet weather has prevailed; but when you have not this opportunity, and do not like to wait for it, soak the ground completely all round for some distance, and follow it up by daily supply, until the rain relieves you of the labour.

Gravel Walks should be turned towards the end of the month, and rolled smooth; it gives them all the appearance of new ones; and if the gravel be too dirty or too thin, a fresh coat of it will be desirable.

The verges of beds and borders should be cut even, and of uniform width, for their growth during the winter is generally uneven; the most hardy grasses continuing to thrive through almost all weathers, while the more tender are checked through the winter. The edges of lawns, also, must be cut even; and mowing begins to be necessary, as well as going carefully over the grass, to take up with the spud the coarse weeds and flowers which are unsightly, such as daisies, dandelions, thistles, &c., wherever they obtrude.

Borders will by this time show all their bulbs and herbaceous plants, so that the surface may be stirred up and raked without damaging the contents; whereas, if you begun before all these things were up, although labels might have pointed out the places, they would be in great danger. Let the whole of the borders, clumps, and beds be thus made level, and be cleared of obnoxious plants and weeds; it makes the spaces clear, and shows where the flowering plants may be placed, or annuals sown to remain for flowering.

UNDER GLASS.

Plants under cover in green-houses, stoves, pits, &c., of whatever kind you are forcing, and however you are forcing them, must be constantly watered and removed into cooler places as they begin to open their bloom, as whether they are in hot-beds made of common stable dung, or a pit heated, or a proper stove, if they perfect their bloom in heat, they will assuredly flag on their removal, whereas if they are removed before the flowers open, they will open better in a cooler place. Thus from a hot-bed or stove, they should be removed to the green-house, or a room in the dwelling-house. Other plants may be put in the forcing place, to succeed those now almost flowering or getting forward. The green-house, stove, propagating house, and pits, must be well cleansed and brushed out, to clear them of vermin, rotten leaves, and dampness. The shelves should be brushed over, the bottom of the pots examined, and where the drainage has been at all impeded, the holes must be cleared out. Examine plants of all kinds, to see if the pot is filled with roots, that they may be shifted into pots a size larger. Take off dead leaves from plants, and wash any that indicate bug or scale with soap-suds, and afterwards syringe them well with plain but rather warm water.

THE STOVE AND ORCHIDEOUS HOUSE.

Stove.—In this department it will be found that many plants are inclined to start into vigorous growth, and consequently require examining to see how their roots are affected. If the pots are very full, they should be shifted into larger ones without their fibres being damaged. Bulbous rooted plants are very likely to start this month, and as they are supposed to have had a long season of rest, they may be shifted, well watered, and placed in warmer situations; Gesneras and Gloxinias must have abundant room and water, and they should be placed out of the way of any drip, for as much of their beauty is in their foliage, so must it be preserved against damage; the drip will rot a leaf on the spot where it falls, and make it very unsightly. As these plants throw up several shoots, they must be regulated as to number. We prefer selecting one only, and taking the top off that it may branch out; nevertheless, if large, spreading, bushy subjects be wanted, several may be kept growing, and in that case, the most vigorous should be kept trained in the centre, and the less strong ones outside; generally, each shoot has a stick to support it; we, however, prefer making a plant stand by itself. The various subjects which are rising for bloom must be well watered; climbing plants must be fastened to their supports as they advance in growth, for if neglected a few days, half the leaves will come wrong side outwards.

Orchideous Plants, whether in pots, baskets, or on logs of wood, now require syringing, and when the sun comes out strong they must be shaded, especially the blooming ones, or those near blooming; dry heat is very destructive to incipient as well as advanced flowers, especially those of the fleshy texture, peculiar to many orchideous plants. The effect upon some is singular; for instance, the Oncidium papilio, or butterfly plant, instead of flowering with broad expanded wings, as it were, will, if kept too dry, bloom with a narrow skeleton-like flower, which persons unaccustomed to their culture would almost set down for another variety; and this more or less applies to most of those species which are remarkable for broad and expansive, though delicate, wing-like flowers. Some of the Catleyas, Stanhopias, and Oncidiums, are particularly beautiful, and depend much on uniform heat and moisture. It is not every plant that requires such treatment, therefore orchidaceous plants should, if possible, be in a separate compartment of the stove, if not a separate building altogether; and if not possible to separate them by a partition, they should be surrounded with moss, which will retain the moisture, and be placed at the warmest end, where a shade can be thrown over the glass during the strongest heat of the sun. Those orchideous plants which are growing on logs, with moss about them, should be well supplied with moss where they have become bare; and plants growing on the walls, which is a very common, and for many subjects a very successful mode of growing them, should have a good quantity of that material all over the wall, where there are no plants, as well as where there are some, for their roots run strangely about, when there is anything to cling to.

CONSERVATORY.

This, in a garden establishment, is like the show room of a manufactory. The management should be as nearly like that of the green-house as possible, but as it is generally a more lofty building, and requires more attention to avoid frost, and moreover is generally considered a place of comfort for a walk from the house, you calculate on keeping up the temperature to 40°, 45°, or even 50°. Besides requiring it for the comfort of a visit, you must always bring in all the beauties as they arrive near perfection, and therefore you will often have stove plants as well as those from the green-house, and forced flowers, and these would be chilled, and soon spoiled, unless some regard were had to the temperatures such subjects require. The conservatory must be kept clean; all littering things be removed; dead leaves, or dead blooms, being unsightly objects, must never be allowed to remain an hour, if it can be avoided. Look to any climbers that may be growing permanently in the conservatory, and have them fastened properly as they grow. Shade such parts of the house as contain any rare objects in flower, because a few hours' hot April sun would make them flag; Rhododendas and Azaleas are especially liable to this after forcing, and sometimes do not recover again; remove all subjects that are past their prime, if they look untidy. It is not so however with Camellias, because the plant is very handsome even without bloom; all you have to do, is to remove the decayed flowers; besides which, the conservatory is the best place for them to make their growth; water effectually; to do this you must examine every plant.

THE GREEN-HOUSE.

The plants here are generally very miscellaneous—Geraniums, Epacris, Heaths, Camellia japonica, the varieties of Acacia, Hovea, Chorosima, &c.; many of which, where full collections are grown, having separate pits, or houses, are in more moderate establishments grown together. Most of these subjects require merely protection from frost; they want no heat beyond that which is sufficient to banish frost. If 32°, being the freezing point, be avoided, there is not one of these subjects that will be the worse for never suffering the warmth of 35°. Such being the case, the object is to keep down the temperature by opening windows whenever the weather is mild, and there are no cutting winds; the great difficulty, however, is to keep down the temperature during a frost, for the necessity of firing is obvious, and the most constant attendance is required to see that the temperature is not raised too high, for it must be checked then by letting out the heat at the top of the house, and unless this is done cautiously, there will be mischief. The great disadvantage in increasing the temperature is, that the plants set off growing, or are drawn up weakly, or they are forced into bloom before you are ready for them, or they suffer changes and checks, which perhaps throw off the bloom altogether, especially the Camellias. Give therefore, this month, all the air you can; and if you can so manage, rather cover up against light frosts, than use fires: of course you must be prepared, at all risks, to have the aid of fire-heat in any very severe weather, but not more than you can help. As soon as plants show their flowers, remove them into the conservatory.

KITCHEN GARDEN.

Potatoes, the most important of the garden produce, may be planted for the main early crop. Many different kinds of early potatoes are now offered, and most of them good; for indeed there is no inducement to offer a bad potato, nor any inducement ever to grow one a second year. Most of the seed-shops have a favourite to recommend, but generally at a price which only enables us to grow for stock, varying from five to twenty shillings per bushel. But any of the approved and cheap, or moderately cheap sorts, will do. The growers of Chapman's potatoes, who took them up in November, and pitted them, or left them in the ground, to be covered over and dug up as they were wanted, should now introduce them to table; they will be found as white in the skins, as clean and as fine, as the best potatoes at the best season. Many tons will be sold and eaten, as new potatoes, and be valued as fine ones. In planting the early potatoes for main crop, let them have a warm border in a sheltered situation, where they can be well protected from cutting winds and frost. Litter will always keep off the frost; and if the spot be sheltered from the winds, there will be but little chance of the litter being blown off, which has often been a misfortune to early crops just coming through the ground. These early potatoes should be planted in drills, about three inches deep, the stuff on the sides being drawn down upon them; but if the ground be low and wet, they may be laid on the surface, and the mould be dug from each side and covered over them. The other way of planting is to get some hot stable dung, dig trenches a foot deep, and nearly fill them with it trodden down, and cover dry mould over it; and on this plant them as is usual for earlier months. Towards the end of the month you may plant out some of a later kind, either in drills or by dibble, but we like drills best if they are drawn deep enough. When potatoes are planted on a large scale, the plough is sometimes used; and some one following the plough, drops the sets into the furrow; when the next furrow is making, the previous is covered with the mould thrown out. With regard to the ordinary distances at which potatoes should be set, something depends on the kind. The dwarf sort may be from eighteen inches to two feet. Those which grow taller, must have two-and-a-half to three feet. If any potatoes, already planted in warm situations, should be breaking the ground or peeping through, draw some earth over the tops to protect them; and besides this, keep a good thickness of peas-haulm, or loose litter of some kind, every evening and during frost; for although they are growing under ground, and doing well so long as the tops are not nipped or damaged, they would receive a great check if at all frosted. In all potato planting let the sets be whole potatoes, if you can get them; they ought to be larger than the smallest chats, but smaller than are generally eaten; not but we have had a good crop before now from very small sets; and we are quite sure that whole sets are a safer crop in frost, dry, wet, or any other excess, than cut sets ever can be.

Hot-Beds.—Any of these which have declined in heat, and are still wanted for any purpose, must be lined with fresh dung, as directed last month. Supposing that you have no hot-bed yet, and intend to grow cucumbers, or raise any seedlings that require heat, such as capsicum, chilies, &c., the making of hot-beds must be managed as already directed; but where they have been already made and in use, the heat must be kept up at any cost or trouble; for either cucumbers or melons would be sure to suffer from any material diminution of warmth. If these plants are forward, the number of fruit must be limited; the weakly shoots should be removed, and strong bearing ones encouraged; not strong ones in mere thickness of stem, but short-jointed, vigorous shoots, with fruit showing; for there will often be strong, thick, long-jointed, rank-growing branches, which are better away at once. Air must be given in mild weather to whatever the hot-beds may contain; whether it be cucumbers, seedling chilies, capsicums, or other subjects. If you are fruiting either cucumber or melon for show, select a handsome fruit after it has begun to swell, and take all others off the same branch; but see it fairly set off swelling and promise to be handsome, before you throw away others; the one you save will be the better. Cucumbers are grown in wooden troughs to prevent their growing crooked, but that fruit is best which does not require it; nevertheless it is a precaution as well taken, because the fruit ought not to lie on the earth, nor on the bare trellis, if they are grown on a trellis. Melons are merely lifted up, and a bit of tile or slate put under them.

Peas.—Independently of succession crops of the early kinds of pea, sow some Cormack's Prince Albert Peas, to admit of being stuck. They will require the tallest sticks that can be got. The pea will grow to the top, and hang all about afterwards. The particular properties of this pea are singular; instead of blooming, seeding, and dying as other peas do, in a season, it seems to be, like the Scarlet Bean, continuous in its growth the whole summer, and to bloom and bear the whole time; so that it may be seen with actually ripe peas, peas fit to eat, peas only just set, and blooms coming and perfect. Independent of this continuous bearing quality, the flavour is considered superior to that of almost any other pea, if not the best of all. The disadvantage is its great height; and this is so great, that nothing less than six feet distance from row to row is sufficient for the growth. It is a great bearer. Groom's Dwarf Pea is another hardy pea for any season, and is now getting common; that is to say, it is now in the hands of most seedsmen. The early frame and Charlton Peas are also good hardy sorts, and generally safe to depend on. There is a new pea advertised, under the patronage of the court; for letters are exhibited from the steward of the household, and from Mr. Ingram, the gardener at Windsor, the one extolling the flavour, the other the growth of the pea. These are let out this season by Mr. Waite, of Eyre St. Hill, at three half-crowns per quart. All of these will do well to plant or sow this month. Peas already well up must be earthed; and the best way to do this, is to draw the earth up into a kind of bank, on the north or east side of the rows, rather high, while on the front or sunny side they may be only drawn up to the stems.

Capsicums, Chilies, Peppers, &c., if not sown and up, and fit to plant into pots, must be sown now; but if up, and large enough to move, put three plants into a forty-eight sized pot, if they are to be planted hereafter in the open ground; but if to be grown in pots, one plant of capsicum in a pot is enough; and these may be placed in a sixty-sized pot, to be shifted into larger as they advance.

Salads and Lettuces.—Sow all kinds, some to be protected under glass, others to take their chance in the open air, and have only litter thrown over them. Lettuces of all kinds may be planted out from the seed-bed in drills, the sides of which are a great protection against high winds. Sow all kinds of small salads, corn salad, mustard, cress, rape, radish, (short-topped and turnip-rooted). Any of these that have been sown and are up, should be carefully protected; lettuces thinned, and also corn salad.

Beans, Kidney and Broad, should be planted where they are to grow. Any autumn sown beans should be planted out. The distances of Kidney Beans sown now should be six inches in the row, and two feet from row to row. Broad Beans about the same, if the small dwarf sort.

Celery.—Plant out in trenches any that you have large enough from the early sowing. Dig the trench a foot deep, fork up the bottom with a large portion of dung, and plant along the centre. Let the plants be about six to twelve inches apart, according to the time it is to grow; much of this esculent being required early, and consequently in a small state; and this planting will rarely stand long without running to seed.

Turnips.—Sow a good piece this month, taking whatever period promises best. If the weather be showery, and fine intervals, so as to allow of working the ground, a better period cannot be seized. In the ordinary April weather, the middle or latter end is better than the beginning. Dig, dress, and rake the ground even, and sow either broad-cast, or in drills nine inches apart.

Herbs of all kinds may be slipped and planted out to form new beds. Sow, if sowing be not already done; and especially parsley, for which there is always a demand.

Operations of ordinary kinds, such as earthing up all sorts of crops, weeding, cleaning paths, and sticking peas and beans, and other routine work; watering, if the weather be dry, which is not often; protecting tender things against night frosts, &c. &c., must be continued. In other matters be guided by previous directions.

Spinach.—Sow the round-leaved sort either broad-cast or in drills; to be thinned out when they come up, and can be laid hold of, to two or three inches apart; and when the plants get large enough to eat, three out of four may be pulled, so as to give more room to the others as they advance; for they may be left at last in good ground nine inches apart, and will grow so as to fill that space, while the leaves may be taken instead of the heart; and in consequence of rapid growth they are sweet, tender, and continue to grow a succession for use.

Carrots and Parsnips may be sown for a main crop; so also may Beet-Root. Whyte's new sort of beet is considered the best colour and flavour, of the recently introduced kinds. Parsnips may be sown, as well as beet-root, in a small bed to plant out from, if there be any scarcity of room; but the carrot should be sown broad-cast, or in drills, where they are to remain; there to be thinned with the hoe to four inches apart, or six inches in rich ground.

Garlick and Challots.—Buy or procure the small offsets which are not large enough for use, and plant them six inches apart, in rows a foot apart; but the proper way is, at digging-up time to sort them, keeping out the largest, and replanting the others at the same time, the ground being merely dug and dunged. The depth at which these roots are generally planted is two to three inches below the crowns. It must be understood that autumn planting for bulbs which we desire to propagate or grow well, should always be preferred; but if not done in autumn, better late than never.

Kale and Winter Greens.—Sow this month all or any of the kinds which go under the various names of Brown Kale, Green Kale, Variegated Kale, (this, by-the-by, is in our estimation the best of all,) Brocoli, Ragged Jack, Scotch Kale, &c. Sow in patches, in small beds, for planting out.

Savoys.—Perhaps the best of all the winter cabbages may be picked out from the seed-bed into nursery-beds, pretty close together, merely to grow into strength for planting out hereafter.

Brussels Sprouts, a delicious and highly patronized, as well as handsome vegetable, should be sown this month; and it should be bought where the seedsman will warrant it imported seed, for the continental people take infinitely more pains with seed than we do in England, even the best of us. Besides, gardeners may be defeated in saving any seed of the cabbage tribe, by a neighbour who allowed any other kind to flower in his garden.

Onions.—Sow more if you require quantity and succession, or as a precaution; for it will frequently happen, that in particular seasons the April sown crop will beat the earlier. Thin those of last month's sowing, and weed them at the same time; there is nothing like plenty of room, if the ground be rich; and indeed, if it be the only piece of ground that can be dunged when the onions are sown, it is the most requisite. Well decomposed night soil, or pig's manure, will not be found too strong for this crop.

Cabbages.—Plant out from the seed-bed into vacant spaces not better employed, or at all events put out a few for succession and continuous supply. This is one of the most useful of all vegetables, except the potato.

FRUIT GARDEN.

Examine grafted trees to see that the clay is sound, and if not take it off, and put fresh on; rub off any buds that the stock is throwing out, that the strength may go to the graft. If there be any necessity for grafting still, though it is much too late, select such scions as have not started into growth, and not bearing wood; but they make less growth than if done earlier.

Wall Trees should be well attended to; all branches coming where they are not wanted, such as in front of the tree, so as to grow outwards, or elsewhere, when too thick, may be rubbed off, before they assist in exhausting the tree; because all useless branches allowed to grow, only take away strength that would be otherwise better distributed among the useful portion of the tree.

Pruning.—All pruning should have been done long since; and the only thing that can be done now, is to repair all errors and omissions in the best way you can. Gooseberries and currant bushes may yet be thinned out, and the cuttings stuck in the ground.

Raspberry, Canes, Vines, and all other subjects neglected up to this time, must nevertheless be so far attended to as their forwardness will allow.

Cleanse all walls of insects, examine every hole for the enemy, and remember that every wasp killed now will save you from a swarm. Syringing wall-trees is a good and effectual mode of thinning the ranks of tormentors.

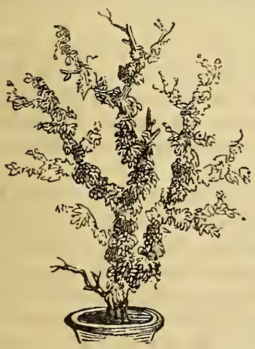
Strawberry Beds.—Remove the runners, if they are not wanted for plants; it will strengthen the bloom and fruit.

Planting.—If any planting remains to be done, lose not an instant.

FANCY TRELLISES FOR CLIMBERS.

If plants must be supported, some regard should be had to their form and fashion. It must be allowed that the more natural a plant looks the better it is; and of all the notions that could be formed those which have been put in practice are the worst. Almost every geometrical figure has been employed in the construction of wire frames. Shields of all shapes, round, square, diamond, and oval, of all sizes, have been stuck into or on pots, and well-grown plants have covered them. All the fanciful devices that art could suggest, and that was unnatural to vegetation, were constantly adopted, and formed a variety of very extraordinary objects. It may be asked, what form could be adopted that would be considered natural? and it is not very easily answered; still there are some perfectly natural and not inelegant. For instance:—

Pillars, whether whole, with the base and capital, whether Corinthian, Ionian, Egyptian, or other order, and whether represented broken or whole, would be perfectly proper, and plants climbing up pillars are natural, but the wirework should be pretty close, and painted stone colour, that it may fairly show what it is intended for. In such case the plant would look as handsome before it filled up the space as after, and therefore should not be allowed to entirely fill up the design: for instance, it might be trained so as to have part of the capital uncovered, and thus show off the design better than if it were entirely hidden. But the imitation of a broken pillar would be quite as natural as a whole one; so also would the imitation of an entrance archway, or of the front of a building, or of the trunk of a tree, and many other subjects, where climbing plants would seem not out of place, or contrary to nature. The branches of trees, which form imitations of trees on a smaller scale, would do very well if selected or made into proper size and form. If too small, the plant would be crowded on it, and if too large the plant would not cover it, so that some discretion as to the size of a branch must be used; but in this there is more trouble than in any other form of support, because they may not be allowed to cross from branch to branch, to look like so many ropes crossing, while the branches themselves are black and bare. They must be directed to cover all the main branches first, that is to say, the trunk, and the strongest branches from it, before it is allowed to wander away into the smaller twigs. The trellis adopted for one subject may not be proper for another. For instance, the one fit for a Tropæolum tricolor would be very inappropriate for the larger growing climbers, like the Ipomeas, the Clematis azurea grandiflora; but where they are mere pillars, they would be far better than any other device. A sort of trellis, that is less objectionable than many, would be those formed a little like an umbrella, because they cover the top, and hang down, forming a sort of standard tree; and where the flowers are pendulous, if the top were like an inverted umbrella, it would show the under part with the drooping flowers to perfection. Some kinds of Fuchsia have been so trained, and the flowers shown to great advantage—but we shall have more to say about trellises.



CULTIVATION OF THE PEACH-TREE ON OPEN WALLS.

BY T. MOORE.

The Peach ranks deservedly high as a fruit-bearing tree; being, perhaps, the most grateful to the taste, and therefore the most highly prized among our out-of-door fruits. The Nectarine, though considered by some botanists as a separate and distinct species, can scarcely be regarded as more than a well-marked variety of the Peach, since they are not unfrequently seen growing on the same tree; and instances have occurred in which both states have appeared together in the same fruit. This question, however, is one of but slight importance to the fruit cultivator, since, whatever botanical difference may exist between them, there is no essential dissimilarity in the cultivation they require; and to him, therefore, it cannot be of any moment whether they are regarded as possessing the nearest possible botanical affinity, or whether their relationship is considered to be more remote.

The botanical name of the Peach, according to De Candolle, who is a very high authority in such matters, is Persica vulgaris, and that of the Nectarine, Persica lævis. They belong to the natural order Rosaceæ, or that group of plants whose structural affinity is with the Rose, that being taken as the type; and to the tribe Amygdalineæ, or that particular division of rosaceous plants which bear their seed within a drupe or stone, enclosed by a mass of pulpy matter, which is the part so much esteemed. In botanical language this pulpy mass is called the *sarcocarp*, and its covering is denominated the *epicarp*; but in more popular terms the former is the flesh, and the latter the skin of the fruit.

The native country of the Peach is supposed to be Persia; and it is also conjectured that it is indigenous to China: both of these speculative opinions are very probably correct, but of the date of its introduction into Europe there is no certain record. Like many other of our cultivated culinary and dessert plants, it has been so long under the fostering care of man, and has been so thoroughly identified with the civilization and refinement of the human race, that all recollection of it in its natural state seems to have been laid aside, and, by a long-continued course of cultivation, it has been brought to the perfection in which we now behold it. Many centuries have witnessed its cultivation in the mild and genial provinces of Asia; and its introduction to Europe may probably be referred to about the date of the reign of the Emperor Claudius, when it might have been carried into Italy by the Romans. From hence it would probably be circulated amongst the majority of the European countries connected with the Roman empire; and in this way, doubtless, our own country was first supplied. It is recorded as having been in cultivation in this country about the middle of the sixteenth century.

Among ancient writers, Columella appears to have been the first who noticed the Peach. It is also mentioned by Pliny, who refers to the popular notion which prevailed, that they were possessed of deleterious qualities; thus it is related that the king of Persia, embittered against the Egyptians, with whom he was engaged in warfare, contrived to introduce the Peach into Egypt, having, it is alleged, the intention of thereby poisoning the inhabitants. It is with reference to this that we read of—

> "— apples, which most barbarous Persia sent,
> With native poison arm'd."

Virgil, too, has not forgotten to record the Peach in his immortal verse. Gerard and Tusser were the first English writers who noticed the Peach, and, after them, Parkinson and Miller. In the present century the Peach has been the subject of several treatises; and its cultivation, together with descriptive lists of its varieties, have formed part of all books professing to treat fully on horticultural subjects.

The impression already alluded to, that the Peach was possessed of injurious qualities, is probably accounted for by the supposition, that some of the varieties of almond were mistaken for it; and this gathers strength from the fact, that these are known to contain considerable quantities of prussic acid. At any rate, it is well known that the cultivated Peach is not now productive of bad effects, at least if it is taken in anything like moderate quantity; and the same opinion must have been also held by the ancients, notwithstanding their fears and prejudices; for immediately following a notice of their poisonous qualities, we read—

> "But now they've lost the power to kill, yielding
> Ambrosial juice; and have forgot to hurt."

The properties and uses of the Peach are various; in our own country the fruit is esteemed as one of the most luscious and grateful of dessert fruits, and they are made into a delicious preserve. In America large quantities of brandy are distilled from them; and so common are they in that country, that swine are fed with them. The leaves of the Peach-tree contain a portion of prussic acid; and, when steeped in gin or whisky, communicate to it a flavour resembling noyeau: they are also employed in domestic cookery and confectionery, for the purpose of flavouring custards, puddings, blanc-manges, &c. The flowers have been used medicinally, and, when made into a syrup, have been administered to children as an aperient and a vermifuge; they are, however, as well as the kernels of the fruit, poisonous, in consequence of the presence of hydrocyanic acid, and, consequently, the unguarded use of either must be highly reprehensible. Probably the whole plant, in its green state, partakes of this property; and it is only when the fruit is matured, and the chemical and vital change of perfect assimilation is completed, that the fleshy envelope of the seed becomes wholesome, and the deleterious qualities appear to be absorbed by the seed itself. There is, however, no question, that a well-ripened Peach is a wholesome, as well as a luscious fruit; and, at the same time, there is little question but that its kernels, as well as those of the almond, are unwholesome, and especially so when immoderately eaten. Further, the wood of the Peach-tree yields the colour called rose-pink.

The Peach appears to have been introduced into France prior to its introduction into England, which, from the geographical position of the two countries, is not at all surprising. The genial climate of France, and the decided nature of its seasons, are peculiarly adapted for the growth of the Peach; and perhaps it has nowhere been more successfully cultivated, than in some of the departments of that country, and especially at Montreuil, a village in the vicinity of Paris.

In America, too, it is most extensively and successfully cultivated as a standard tree; indeed, it has been supposed that some of its stations in that country may be regarded as proving it to be indigenous there. It was observed growing to a very large size near the Mississippi, in Louisiania; and though it might possibly have been conveyed there, yet this is a sufficient reason to suppose it to be a natural inhabitant of that country.

Like most other cultivated plants, the Peach has progressively increased in the number of its varieties. Gerard mentions four kinds; Parkinson, twenty-one; Miller, thirty; and Lindley has described about sixty different sorts, many of which are, however, of inferior quality. It will be desirable to give a selection of some of the most useful kinds previously to entering on any remarks connected with cultivation. The accompanying lists are arranged in the order of their ripening.

SELECT LIST OF PEACHES.

Red Nutmeg (syn. Brown Nutmeg, Red Avant.)—This is a small, roundish, deep red, mottled fruit, of good flavour, ripening about the end of July. It is chiefly valuable on account of its earliness and hardy constitution. It requires to be eaten before it is too ripe.

Acton Scot.—A medium-sized fruit, nearly round, of a pale colour, mottled with red. Ripens about the end of August. The fruit is good flavoured, and the tree hardy.

Grosse Mignonne.—This, which is one of the very best Peaches in cultivation, is known also by fifty other names. It is a large, rather flat fruit, greenish yellow, and deep purplish red, with an exceedingly rich flavour, and a good bearer; ripens from the middle of August to the beginning of September. The tree is not so subject to the mildew as some other kinds are.

Royal George (syn. Millett's Mignonne, Red Magdalen), is another very excellent kind; the fruit is of moderate size, round, light coloured, and dotted or blotched with deep red. It is of a most excellent flavour, and is a good bearer; ripening about the end of August, or the beginning of September.

Noblesse.—This excellent Peach is frequently confounded with another called the *Vanguard*, which is by some considered to be distinct; they are, however, so nearly resembling each other, as not to be worth cultivating in the same garden as different kinds. The fruit is large, roundish, of a palish green colour, clouded with red on the exposed side, and of most excellent flavour. It is a good bearer, and ripens about the end of August, or the beginning of September.

Old Newington.—Another good kind, with large fruit, somewhat resembling the last in appearance. It ripens about the beginning of September.

Mountaineer.—This is a very hardy tree, raised between the *Red Nutmeg* Peach, and the *Violette Hative* Nectarine. It is moderate in size; roundish oval in outline; pale green coloured, mottled with red; ripens about the beginning of September, and partakes rather of a nectarine flavour.

Bellegarde (syn. Galande, Violette Hative.)—This is an old French sort, and, although somewhat tender, is, nevertheless, one of the very best Peaches in cultivation. It is a large fruit, deep red, clouded with darker colour, nearly round, and is high flavoured. Ripens about the middle of September.

Barrington.—A large, pale yellow and red, roundish, very rich-flavoured fruit; ripening about the middle of September. The tree is of vigorous growth, and not liable to mildew.

Chancellor.—An excellent late Peach. The fruit is of medium size, somewhat oval, greenish yellow, marked with dark red; ripens about the middle of September.

Late Admirable (syn. Bourdine.)—A very old sort; fruit large, roundish, greenish yellow, clouded with red; and ripens from the middle to the end of September. It is one of the best late Peaches.

Catharine.—A pale yellow fruit, mottled with bright red; medium in size, round and sweet. It ripens about the beginning of October, which is as late as the Peach will attain maturity in this country, under ordinary circumstances, out of doors.

SELECT LIST OF NECTARINES.

Hunt's Tawny.—A small fruit, chiefly valuable for its earliness. It is roundish ovate in form; pale orange and red coloured; of good flavour; and ripens about the middle of August.

Elruge (syn. Claremont.)—This fruit is of medium size, somewhat oval in figure, and pale green and violet red coloured; the flavour is delicious. It ripens about the end of August, or the beginning of September. This and the next are the most valuable Nectarines in cultivation.

Violette Hative (syn. Hampton Court, Early Brugnon.)—Resembling the last in general character and appearance, and possessing similar good qualities.

Newington.—A large, round fruit: colour, pale green, marked with dark red; flavour, very rich and sugary. It ripens about the beginning of September. The fruit is excellent when beginning to shrivel.

Roman.—This kind is not quite so free-growing in many situations as some others. The fruit is large, roundish, greenish yellow with deep red, and ripens from the beginning to the middle of September.

Peterborough.—The latest sort, but only of second-rate quality. The colour is green; it ripens in the beginning of October. Chiefly valued for its lateness.

The most convenient mode of treating on the cultivation of the Peach, will be to divide the subject into distinct sections; propagation, planting, and pruning, will thus take in all that it will be necessary to advance in conveying instruction to those who are but little versed in the subject, and for whose especial use these remarks are written. The cultivation of the Nectarine is identical with that of the Peach.

PROPAGATION.

By Seeds.—The Peach-tree is raised from the stone for two distinct purposes; and these are, either to obtain new and improved varieties, or for the purpose of obtaining stocks, with a view towards extending and perpetuating the older kinds by means of budding. In America, where the Peach is grown in orchards, as an open standard tree, it is recorded that they adopt this mode of propagation almost exclusively. Their object is not so much to secure particularly fine fruit, or fruit of rich flavour, as to obtain large quantities, for the purposes of distillation; it is also said that they use them largely in feeding hogs: these being their principal objects, and the climate and soil being well adapted to bring the Peach to perfection, it is, doubtless, the least troublesome and expensive method which they could adopt, in order to obtain a supply of trees for common purposes. Such a course is, however, inapplicable in this country; the means which are required to bring the Peach to its perfection here, and the esteem in which it is held, would render it far too expensive a procedure thus to cultivate a number of plants, the majority of which would, perhaps, be found to be altogether worthless.

Since, therefore, the fruiting of Peaches, which have been raised from the stone, is only resorted to as a direct means of adding improved varieties to those already in cultivation, the operation becomes at once in a high degree scientific, as compared simply with the growth of stocks for the purpose of budding the established varieties upon. We will briefly notice the conditions which it is found necessary to attend to in order to obtain satisfacfactory results.

The first consideration which should present itself to those who attempt to improve the races and varieties of fruit-trees is, a clear perception of what would really constitute an improvement on the varieties already in existence. This will be more clear upon illustration; thus, an early-fruiting variety might admit of improvement by obtaining a seedling which would secure its precocity, and add to it an increased size of fruit, compared with what might before have been possessed; thus, too, a large fruit might be improved by combining with it a higher degree of flavour; and thus, again, a high-flavoured fruit would, perhaps, admit of improvement by inducing a greater degree of vigour and hardiness in the constitution of the plant. Now, these improvements are not imaginary; it is possible by perseverance to effect some at least of them; and, to speak of this work in its connexion with the present day, while there is much done in this way, there is still a vast deal more which might be done, if it were properly attempted, and perseveringly carried on.

On the other hand, it is quite possible, and indeed it too often happens, that by inattention to points of this nature, new varieties may be produced, which display no improvement upon the original; as an instance, a large fruit might, in a seedling plant, be combined with a degree of tenderness in the constitution of that plant, which its parent did not possess, and which would evidently be a disadvantage, rather than an improvement.

The principal desiderata, in the shape of improvements, to which attention might, in these days, with very great propriety and advantage be directed, would be to secure a greater degree of constitutional hardihood in trees which produce the finer and higher-flavoured fruit, and to increase the size, and improve the quality, of the fruit produced by those trees which are naturally precocious.

The manner of carrying out these improvements into practice would be something like the following, which may be taken as an instance:—In the spring season, just before the trees come into blossom, which is generally in the early part of March, choose out a healthy branch, and remove from it all except two or three of the most perfect blossoms; before these expand, cover the branch carefully with gauze, so that no insect can have access to the blossoms: having previously decided on the nature of the cross, watch carefully the expanding of the blossoms; and observe carefully, too, when the summits of the little thread-like filaments (stamens) assume a meally appearance, and a somewhat larger one in the centre of each flower (the stigma) appears to be developed; the stamens should be removed before they become meally in the blossom which is selected to produce the fruit; and when the stigma of this is fully developed, the meally stamens of the variety whose qualities are to be blended in the progeny should be brought into contact with it. These little operations must be done with a careful hand, so as not to rupture any part of the blossom which is left to produce the fruit; not more than one blossom should ultimately be left on the branch, and that the most perfect and healthy that can be selected; the branch thus operated on should be immediately marked with the necessary information respecting the cross, so that on sowing the seed which is produced, and testing its future merits, no point connected with its origin may depend on the unaided memory of the operator; the gauze should not be removed till the fruit is fairly set, and is swelling off, and this, of course, during its growth, must receive the usual care, in order to render it as perfect as it can possibly be. This is a single instance; and the same principle should be followed out with each, whether it be a solitary case or otherwise. When the fruit is ripened, the stone (drupe) it contains must be preserved; it encloses the seed; early in the ensuing spring it should be sown, and the young plant grown carefully in a pot; in the summer, when it has made its growth, and the buds are plump and matured, one or two should be taken, and inserted into the bearing branches of some established healthy tree; usually, after one season's growth in this situation, they produce fruit, and the quality of the seedling variety can thus be fairly ascertained. Were they permitted to grow on without budding, they would be some years in producing fruit, and, consequently, the merit or demerit of the variety could not till then be ascertained. Thus much of raising new varieties.

The process of raising seedling plants for stocks, on which to bud the established varieties, is a less tedious process; the stones, or seeds, should be collected in any required quantity, and they may be buried in a heap of sand, out of doors, until the spring. In March sow them thinly in a bed of light soil, and the following season transplant them into nursery rows, in a free open soil, placing them rather closely together; the following season this operation may be repeated, giving them a greater space to grow in, and they may then be budded, as soon as the proper season arrives, or when they may be required.

By Budding.—The most general practice of propagating the Peach-tree is by the operation of budding. It is not necessary here to attempt a description of the practice, as it has been so frequently and so fully explained; and further, the operation in itself being similar on whatever plant it may be practised. It may, however, be useful to notice the different kinds of stocks, or stems, on which the Peach is sometimes inoculated, or budded, since it is found to be of some importance to adapt these to any peculiar soil or situation where the Peach may be required to be planted. The stocks which are principally employed are the various kinds known as plum-stocks; of these, the muscle, the pear, and the free-plum stocks, are those most in use; sometimes the almond is used as a stock, and at other times the plants obtained by sowing the seeds of Peaches and Nectarines. In forming an estimate of the relative value of these for the purpose of bringing the Peach to its perfection, there are two principal points which it is usual and necessary to keep in view; and these are, the adaptation of the stock to the variety which is worked upon it, and the adaptation of the stock to the soil and situation in which it is to be planted. The latter is the least important of the two; for, it may at once be assumed that no Peach-tree should be planted, in any situation, unless the soil has been prepared and rendered fit for its growth; and, therefore, those stocks which practice and experience have proved to be best adapted to the nature and constitution of the Peach, and its varieties, respectively, ought, in every case, to be preferred, in order to secure permanently healthy plants. These stocks are those of the *muscle* and the *pear-plum*. When worked on the almond or the free-peach stocks, the growth of the plants is often very satisfactory and promising in its appearance; but, in most cases, the trees are short-lived: these stocks are best adapted to light and dry soils; and, to cases where very early fruitfulness is desired, even at the sacrifice of the permanency of the plants: the free-plum stocks, that is, those which are raised from sowing the kernels of the plum, are objectionable, on account of their inducing, by their own vigorous growth, an undue luxuriance in the engrafted plants, which renders it difficult either to bring or retain the trees in a fruit-bearing state.

There is one very material objection to the use of seedling plants, of any kind, as stocks, for they are liable to considerable variation in their constitution, and therefore it is impossible to adapt either the particular varieties, or the circumstances of culture, to the growth of the plants, in the infant stages of their existence, in consequence of an ignorance of what their exact nature and capabilities are. On the other hand, when a permanent variety is propagated by means which renders it unvarying in its characteristics, the nature of its growth can then be fully estimated; and as the culture of the Peach-tree involves considerable attention to the adaptation and preparation of the soil, it is not too much to assume that, in all cases, it is possible to provide for the permanent healthiness of those plants, with the nature of whose roots we have the means of being acquainted. The development of the plants, when worked upon the stock we have recommended, is not in all cases the most luxuriant; for on those which are termed the free-stocks, this quality is far more apparent; and hence, perhaps, a person who was not somewhat acquainted with their nature would be liable to make a rash and imprudent choice: their growth, though by no means rendered weakly, is more subdued; the rigidity of the stem serves to regulate the supply of alimentary matter carried into the branches and the leaves, and, in consequence, this becomes properly digested and assimilated, thereby securing the perfect healthiness and *real* vigour of the plants, and avoiding a bloated or plethoric state of the vital organs, which, although it would, perhaps, not at the first be detected, would most assuredly lay the foundation of future disease, and consequent disappointment.

The comparative merits of the muscle and the pear-plum stocks may soon be told: the former is best adapted for those varieties which are of British origin, and are therefore somewhat more hardy in their constitution; whilst the latter is more peculiarly suited to the French varieties, which, though of first-rate excellence, are, to a certain degree, more tender in their nature than those which have originated in our own country.

It has already been stated, that when the stocks are originated from the kernel, they are liable to considerable variation, and are on that account objectionable: the method which is practised in obtaining these stocks true to their respective characters is by means of root-propagation; portions of the roots of these plants are taken when about the thickness of the finger, or somewhat less, and, after being divested of all fibrous appurtenances, they are cut into lengths of from four to six inches; this is done any time in winter; and in the spring they are planted in nursery rows, rather thickly, at about three inches below the surface. These roots are procured either by digging around an old tree, and taking off a portion of those which are of sufficient size, or it generally happens that the necessary root-pruning attendant on a transplantation of established stocks will furnish a new supply. When planted, they should be placed in a sloping position, forming an angle of about 45° with the surface of the soil; this position will enable them more readily to throw up their shoots, and also extend their roots; the operation may be performed any time during the winter, or early in the spring; and by the next spring they will require transplanting, and will need also a greater space in which to grow; they should be pruned up to a single straight stem the first season, and may afterwards be kept headed back, with a view to increase the strength and thickness of that part. They are usually budded at about six inches from the ground, and when they have attained to about the thickness of the finger.

Budding should be performed about the middle of July, or as near that time as the bark will be found to separate freely, or "rise" from the wood; if done earlier, the buds will often push into growth during the autumn months, and are then liable to sustain great injury, in consequence of their shoots not being matured before the winter; on the other hand, if done later, the union is not in all cases so perfect and satisfactory. We have already observed, that it is unnecessary to detail the art of budding; neither will it be requisite here to give lengthened directions for the care of the tree during the time immediately following the operation; the principal points requiring attention at this stage of growth are, to unloosen whatever bandage may be employed to secure the bud, before the stem becomes injured by compression, and also to guard against any injuries which might arise from bruises, occasioned by careless workmanship, or movements about the plants.

It may be worth while to remark, that the Peach is sometimes worked upon the stem of the common wild sloe: the effect of this is just what might have been anticipated: the plants so treated make but little wood, neither is this little at all strong or luxurious; it is in consequence well matured, and the trees are thus in a condition to produce very early fruit. The principal advantage to which this might be turned, would be in the growth of Peaches in very late and cold situations; for this induction of earliness would serve to bring forward the fruit soon enough to become ripened in such situations. The size of the fruit, however, as well as of the branches, and extent and duration of the trees, would by this means be considerably lessened.

It is unnecessary to notice any other mode of propagation. The Peach-tree may be increased by any of the processes which succeed with other plants of the same habit of growth; but they are neither so readily performed nor attended with such satisfactory results as the mode we have been considering. That method is generally adopted, in consequence of its being expeditious and easy of accomplishment, as well as adapted to the circumstances under which the plant is cultivated.

PLANTING.

This part of the subject includes the consideration of the preparation of the soil, the time, and the manner of planting.

The Peach does not attain perfection in this country when grown as an open standard tree.

The shelter and protection afforded by a wall, as well as the increase of temperature to which the branches are subjected, by their contiguity to its surface, which is heated by means of the absorption of the sun's rays, is necessary in order to bring the Peach to its full maturity. But this artificial position involves artificial treatment: the branches can no longer extend in their due circumference beneath the canopy of heaven, and are constrained to occupy a space which would seem only to be a section of the natural outline of the tree; such a space as the plane surface of the wall against which they are planted. The roots, though confined to what may be regarded as scarcely more than half their natural circle, are still possessed of a greater degree of freedom, and are less rigidly restrained than the branches. The natural balance between the roots and the branches is in this way destroyed, and the preponderating influence is given to the former; the consequence is, that they supply from the soil a greater proportion of food or matter, than the latter can assimilate, in consequence of their limited surface and curtailed powers. It is in this particular that the great source of unfruitfulness, not only in the case of Peaches, but of wall-trees generally, consists. This, however, is supposing the trees to be planted without a proper preparation of the border and the soil; under such circumstances it could scarcely be otherwise, except, indeed, the soil were peculiarly sterile, and thus unable to supply too much food to the plants. It will be found to hold good as a principle, that just in proportion as the formation of a border for the roots of wall-trees is neglected, or improperly managed, in the same ratio will barrenness be the result. It must not be inferred, that the formation of the border in a proper manner is all that is required; there are other attentions also required by the plant, which are as indispensable; but those who apply their skill and their attention in laying and making good the foundation, are the most likely not afterwards to neglect the superstructure they have attempted to raise.

Taking these remarks as being illustrative of daily proved facts, we must assume that the Peach-tree ought not to be planted in any situation, if good results are wished for, without some preparation of the soil: but here two conditions are presented to our view—there are dry situations, where the soil is shallow and sterile; and there are also other situations, in which the soil is composed of richer, as well as deeper and moister strata. In proportion as soils naturally possess these latter qualities, they will need the attention we are now about to speak of.

The alteratives which are required by deep soils, resting on wet subsoils, are those conditions which supply thorough drainage, and decrease the depth of earth, so as by that means to bring the roots within the influence of the sun and the air. The first point, then, is elevation; for it is found to be preferable to raise the borders in which fruit-trees are planted somewhat above the ordinary level, in order to give them an inclination of a few degrees towards the south, rather than to endeavour, by any means, to effect the drainage which is necessary, without elevating the soil. The next point is the formation of drains, which may effectually carry off the moisture, as it passes downwards from the surface. These two points will be kept in view, in the remarks which follow on forming the border.

The border intended for the growth of Peach-trees ought never to exceed two feet six inches in thickness; that is, two feet deep of soil, and six inches of drainage beneath it. One foot of this, at least, should be elevated above the ordinary level of the ground; and thus in excavating for the formation of the bottom of the border, not more than two feet need be taken out; this depth will allow six inches for concrete at the bottom. The border should not be less than twenty feet in width; and however desirable or plausible it may be, to supply this quantity of soil by instalments, as the roots extend outwards, it is absolutely requisite that the *bottom* for the whole should be formed at one time. The border should be sloping, so that although raised a foot or more above the level, at the base of the wall, it may gradually decline into that level at its extreme boundary. The bottom of the border, although sloping outwards at the same angle as the surface, should not form a uniform inclined plane, but should be thrown into the form of depressed or flattened ridges, as represented in the annexed longitudinal section of the border. The valleys thus formed will serve to collect the superabundant moisture, and convey it outwards to a principal drain, parallel with the wall, which should occupy the extremity of the border, and should be so contrived as to secure a considerable inclination, and thus readily carry off the water which would be conducted to it. These points being settled, spread over the whole bottom of the border, about six inches in thickness of concrete, which may be formed from any local materials; and let this be made quite firm and

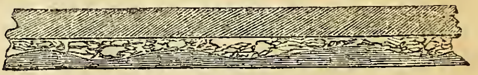


Fig. 1.

solid, so as to prevent effectually the roots from penetrating in any case beneath it: over this place six inches more of open rubble, such as brick rubbish, or brick and lime rubbish mixed; and on this, a portion of very rough soil, turfy, if it can be had. The drain at the extreme edge of the border should be laid with tiles, and filled up with open rubble, to admit the water readily which would pass from the border. The nature of these arrangements will be understood better by referring to the annexed transverse section of the border, showing the position of the principal drain.

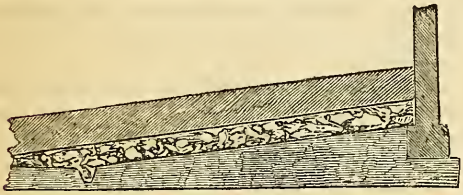


Fig. 2.

The bulk of the soil which is best adapted for the Peach, is that known as loam. It should be of a good sound holding quality, not plastic like clay, but friable, and rather greasy to the touch; it should be used in as rough a state as possible, within reasonable limits; the proportion in which it should be employed is about three parts of loam to one part of leaf mould, and one part of old lime rubbish. These ingredients should be intimately blended, and then conveyed to the border, and placed above the drainage already spoken of. If the natural soil is of good quality, a portion of it may be admixed with the compost; but it is preferable, wherever it can be accomplished, to make use of entirely fresh soil. In arranging the soil, it should be placed evenly, with as little compression by treading on it as possible, during the formation of the border, in order that it may settle regularly and evenly, and not in such a manner as may rupture the roots of any trees planted in it. It should be put together lightly, not at all compactly; and about a foot extra in thickness should be allowed for its consolidation, which will take place gradually, and should never be augmented by unnecessarily trampling on it at any time. These operations may all be performed at any time in dry weather during the summer, so that the border may be ready for the reception of the trees early in the autumn.

The time of planting should be just as the leaves are falling; they may be planted at any other time, but this is the best, for at this time every part of the plant is stored with elaborated food, and the roots are as perfectly as they can be, in an inactive state; consequently, if their removal is effected when they are in such a state, they will sustain the least possible check or injury by removal: the young fibres will be stimulated to make an effort, in consequence of being moved; and they will thus become developed just in that form and at that time in which they will be ready to grow away uninterruptedly, on the approach and return of the spring; and the more visible organs of the plant—its leaves, will be enabled to commence and carry on their peculiar functions, for they will be duly and constantly supplied with the elements of nutrition.

The spring has sometimes been recommended for the season of planting, especially on heavy and wet soils; but on soils such as these, it is useless to plant the Peach-tree at all, whilst they are in that state; and if any due preparation is made for them, as ought to be done, the supposed reasons for spring planting will be done away with. The principal objections made to autumn planting, consist in the supposed liability of the young fibres to become injured by the act of transplantation, and thus to remain in a damaged and mutilated state during the whole of the winter. If, however, the transplantation has been effected so early in the autumn as we have recommended, and the soil and border have been properly made for their reception, the young roots will have abundant time to establish themselves anew before the commencement of severe weather; and the branches being thereby placed in communication with the moisture of the soil, they will, immediately on the approach of warmer weather, draw up an increasing supply of food from the soil, by the capillary action of the spongioles; and this will act as a counterbalance to the parching influence of evaporation from the branches, caused by the increasing heat and brisk winds which prevail in the spring, and necessarily cause a shrivelling in the branches and a contraction of the vessels, if these are not kept distended by means of the action of the roots in the soil.

It cannot be too strongly expressed, or too often repeated, that a soil which is not rendered perfectly free from the stagnation of superfluous moisture, by a system of thorough drainage, is not only unsuitable for the growth of such tender fruits as the Peach and Nectarine, but is also unfit for the reception of any trees or plants which are not absolutely aquatics. Plants can no more live without food than animals; they cannot receive nourishment if their food is presented to them in a state unfit for their peculiar organization; neither can they live and thrive if they are supplied only with unwholesome food. Now it cannot be denied that the elements of the food of plants may be, and perhaps are contained in soils which are unduly furnished with water; but they are, in this case, just in that unwholesome condition which renders it a moral impossibility that plants can thrive, even though they do imbibe them. Wet soil, too, is necessarily compact, the weight of water contained in it acts with continued pressure on the adjacent layers, and the fluid itself is present to fill up the interstices, which would otherwise be open; under these circumstances the gaseous elements of the air cannot penetrate the soil in sufficient abundance to render their allotted portions in the nutrition of plants; and hence, under such circumstances, some portion at least of their proper food is unavailable by the plants.

In removing such trees as the Peach, for transplantation, some care is necessary, so that the least possible amount of injury may be experienced by the roots. The proper course to pursue is to commence by opening a trench at the extremity of the rootlets; then the soil above and among the roots should be removed in a careful manner, so that they may be entirely cleared from the soil throughout their whole length. The instrument with which this can most effectually, as well as most carefully be done, is a flat-pronged fork; a spade should not be used in the operation. If the tree has to be removed to any distance, the greatest care must be taken that the roots become neither injured nor desiccated during the time of transportation; and one of the most ready means of preventing these consequences is, by enveloping the roots in a piece of a garden mat as soon as the plant is taken up, and continuing it about them until it is replanted. In most cases it will be politic to remove a portion from the extremity of the strongest roots with a sharp knife; but this should not be done in any case where a particular root does not manifest a disposition to grow more rapidly or rampant than others; it should be adopted, not as a matter of routine, but simply as a means of regulating and balancing the relation between the roots and the branches, and also between one root and another.

There are some important particulars which should be attended to in replanting the trees after their removal; their roots should be spread out in a form regularly radiating from the stem, and should be placed nearly in an horizontal position, but slightly inclining downwards; the point from whence the upper roots issue from the stem, should be so adjusted, that when the soil is regulated, it may be only just covered with the soil, though still nearly a foot above the level of the border; this will be accomplished by raising a little hillock of soil about the stem; the roots should be carefully covered with fine soil, to about the depth of eight inches; no consolidation of the soil by means of treading should be suffered, but it should be placed evenly and lightly, so that it may naturally settle down in a regular manner; hence arises the necessity of avoiding treading and trampling on the border while it is making, for if this is done, the parts which are thereby consolidated will not settle equally with other portions, and the roots will become ruptured and injured, just at the period when it is essential that they should remain undisturbed, so as to establish themselves afresh in their new situation.

There are two points of special attention which should follow the act of transplantation: one is to secure the tree in a safe and careful manner to the wall, so that it may not be rocked about by strong winds; at the same time it must not be subjected to injury by reason of rigid confinement, which might probably suspend the trees, and thus cause the most injurious results. The effect produced by strong and heavy winds upon newly planted trees, is to disturb the newly adjusted roots, to draw them from their position, and then to crumple them up as the tree is rocked again in an opposite direction; in this way the spongioles of the roots are prevented from abstracting their proper food from the soil, and consequently the growth of the plants is retarded and injured. Another attention which should be afforded to them is, to cover the surface of the soil with a thickness of two or three inches of loose long straw or litter, as a protection to the roots in severe weather; the roots being near the surface of the soil will require some protection of this kind, in order to prevent them from injury during severe or protracted frosts; coverings of this kind are beneficial too in assisting to maintain a degree of warmth in the soil, which warmth, in consequence of its connexion and contiguity to the roots, tends in some degree to counterbalance the effects of coldness, induced by evaporation from the branches.

It will rarely be necessary, or even desirable, to apply water at the time of planting; in most cases the soil will be sufficiently moistened; and unless the weather should chance to be sultry or parching, it will be preferable not to apply water, lest it should be inductive of a renewed growth and excitement beyond the limited degree which is desirable as an establishment to the roots. If, however, the autumnal season should be hot, and unaccompanied by natural showers, then it will become necessary to apply such a proportion of water, both at the roots and over the branches, as will prevent these latter from becoming parched and shrivelled. In almost all cases which can possibly be conceived, about two moderate waterings, at intervals of a week or ten days, will be sufficient; and it will be found to be preferable to apply water in this manner rather than in less quantities, and more frequently repeated.

PRUNING.

This division of the subject will include the pruning and training of the plants from youth to maturity, and the operation called summer pruning.

We commence with a maiden plant: by a maiden plant, is implied one which has been budded or "worked" during the previous season of growth; and which is consequently a plant with the one-year-old shoot developed from the inserted bud, and its growth matured. The transplantation of the stocks previously to their being budded, as already spoken of, is the means of securing a tolerable proportion of root to the plants at this stage of their growth; the young plants should, however, be transplanted after being budded, and may either be at once removed to their permanent positions, which is preferable under favourable circumstances; or they may be planted in a suitable reserved situation, and there brought into a regular course of training for the situations they are afterwards to occupy. What has been already said of transplantation will refer to the operation now spoken of, both as to the season, and the manner of performing it; our object in this place will be to notice only the pruning of the plants from this stage and upwards.

The month of February is the best time to perform what is called the winter pruning; and during that month, in the season following the replanting of a maiden tree, it should be cut down to from four to six inches in length; this should be done just before the buds begin to push, which will vary in some trifling degree, but may generally be taken at about the latter end of February. From the portion of the stem which has been retained, all the buds should be removed, except three or five, as it may chance to be either strong or weak, and well or ill furnished with buds; previous to planting, the nature and position of these buds should have been examined, so as to fix on which should be the front, and which the hinder part of the tree; the roots will require to be laid outwards from the front, and the uppermost bud which is retained, should be one placed on the outer side of the branch; the other buds which are retained beneath it, whether two or four in number, should be as nearly as possible balanced on each side of the stem, and none should be retained whose position is at the back, or that part which will come next the wall. The diagram, fig. 3, will explain this; *a b* represents the one-year-old shoot, and *c* the point where it should be cut through; fig. 4 will show the position of the buds which are retained, by the shoots developed on it; and the development of these buds will furnish the basis of the future head of the tree. It is possible, if the trees are strong, and it is desired to multiply the side branches rapidly, to obtain another pair of side branches, by stopping the uppermost or leading shoot when it has extended three or four joints in length, and thus to secure side branches from the current season's growth; it is, however, in every respect better to form the tree in a more regular and steady manner, as it has then an opportunity of increasing its constitutional vigour as it increases in size; which cannot take place to so great an extent when its growth is pushed on too rapidly. The proper management of these shoots, then, is, to train the topmost shoot upright, and the side shoots at an angle of 45°, or as near it as may be convenient, giving them, of course, an outline which will adapt them to the plane surface of the wall. They should be encouraged to make as perfect growth as possible, watching against and destroying blight, insects, and mildew, and securing the free action and agency of as many perfect leaves as can be secured. The remarks hereafter to be made on summer pruning and treatment, will refer to the attention required during the growth of these young plants in the summer season.

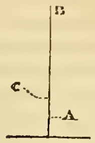


Fig. 3

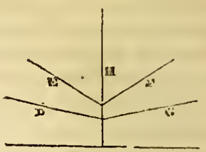


Fig 4.

The diagram, fig. 4, represents the tree at the end of this season's training; *d*, *e*, *f*, and *g*, representing nearly the points at which the branches should be cut the following spring. It may be recollected, that the treatment of the upright shoot is a simple repetition of the first year's training, and should be performed in the same manner; and, with a view to similar results, it should be shortened or cut back to the point *h*. The side branches require somewhat different management; the pruning they receive during these young stages of growth, should be with the view of inducing an increased number of side branches; it will therefore be evident that the number of buds which are permitted to remain and become developed from these, must be very limited, for otherwise the branches will become crowded and confused. They may be cut back to from ten inches to a foot in length; the uppermost bud should be encouraged to extend in the same direction as the branch, and one other should be reserved on the upper side of the branch, and at about one-third of its length. These side branches, when once fixed on, should extend in a line to the extreme circumference of the tree without any obstruction; and as the circumference of the circle traversed by them becomes larger as they extend outwards, there can be no danger of their interfering with each other, if the simple rule of training them in straight radiating lines is adopted. The diagram sketch, fig. 5, represents the probable appearance of a tree at the end of this second season's training.

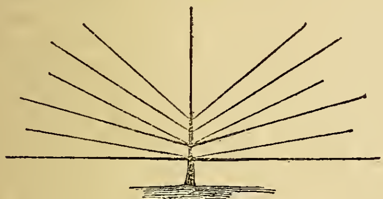


Fig. 5.

It will be unnecessary to detail the subsequent annual pruning, for the same principles should be applied throughout the whole existence of the tree. The upright branch in the centre should be continued as a source of side branches, until their divergence has filled up the whole of the space which is available by them; and as this branch is to be continued, so the means of securing its continuance will be by an attention to the principles detailed during the first season of training. The side branches should be continued outwards in direct lines whenever they are commenced, and may be increased in number as the spaces become wider on approaching the circumference of the tree; whenever the distance between them exceeds a foot, a fresh ramification may be allowed, either above or below, as may be required, and found most conveniently placed with reference to the space to be filled up. Thus much refers to the pruning of the tree, with reference to its form; the skeleton will be thus laid out, and the object will be to keep this filled in with a constant and regular supply of young fruit-bearing wood. The diagram, fig. 6, may be taken as a representation of a tree approaching maturity.

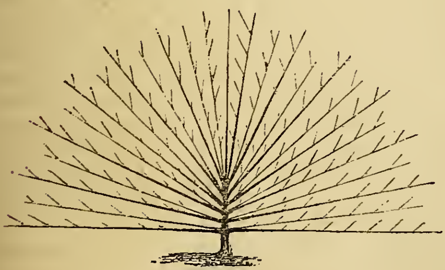


Fig. 6.

Hitherto we have spoken only of pruning with reference to the form and contour of the plant; it remains, therefore, to say a few words with respect to pruning inasmuch as it relates to the production and regulation of fruit-bearing shoots. It must be recollected that the Peach produces its fruit blossoms immediately from the wood of the previous summer's growth: the object, therefore, is to supply the tree as regularly and as thickly as its powers will endure, with such fruitful shoots annually. It has been already said that the side branches should be carried outwards in direct lines, and should occupy positions somewhat near one foot distant from each other. On the upper side, only, of these, should the annual wood be permitted to develop; and, therefore, at the pruning season, in the spring months, all the buds should be removed from the trees, which do not occupy a position which will admit of their development in conformity with the order and regularity to be observed in training. This renders it necessary to remove the buds produced from the lower side of the branches, and also those immediately in front; and even of those which then remain it will be found that they will not all be required. With reference to the contiguity of these shoots, they may be allowed, at about eighteen inches distance from each other, along the branch; if nearer than this, they will become crowded; and if more distant, there will be a loss of space, and, consequently, a liability of loss of produce. The manner in which these shoots are to be trained will be understood by referring to fig. 6. In regulating their length at the winter pruning, some attention must be paid to their individual strength and capabilities; but they should seldom or never be retained more than a foot long, and they should be cut back to a wood-bud, which differs from a blossom-bud in being small and pointed, whereas the latter are large, and nearly round. To maintain this system of pruning and training, we require, annually, a shoot similar to those just mentioned, to occupy the place of each; and some others to fill up the fresh spaces, occupied as the trees extend: now these are to be obtained by training in a young shoot from the base of each bearing shoot, during the summer, at full length. The one selected should be that which is most conveniently placed, with reference to the position which it is to occupy;

but, for obvious reasons, it should be as near the very base as possible: the topmost bud, too, must be allowed to grow, and may extend a few inches, and should be then shortened or stopped, by pinching out the growing point. All the others on each shoot, which were not removed in the embryo state, and *have not* fruit set at their base, must be removed as soon as this can be ascertained; and all those which *have* fruit set at their base should be allowed to develop two or three leaves, and should then be stopped. A repetition of this, with reference to each part of each tree, annually, will provide the trees with fruit-bearing wood; its healthiness, and the amount of its produce will, however, depend partly on other circumstances, of which the nature and condition of the soil, and the peculiarities of the season, are the most important.

This system may be called *regular fan-training:* there are other modes of training the branches of wall-trees into a fan-shape, which may be termed *irregular fan-training;* and of this there are numerous modifications. It may be remarked, that in practice, it is by no means important to attempt the strict regularity which it is necessary to keep continually in view, in rendering a description of any operation at all easy to be understood. The use of descriptions of this nature is chiefly to develop and establish the principles on which the operations they refer to are to be performed; and, in order to do this, they must necessarily speak of order and precision. In practice, however, if the principles are kept in view, and maintained without violation, there may always be a considerable latitude taken; and even when examples are given of the manner of performing an operation, they are not to be copied, but studied, in order to furnish the practitioner with some knowledge of principles; and these principles he should himself apply to his own particular case. Herein lies the main part of the evils which are wrought, by a mere possession of book-knowledge: the instructions are copied, and not studied; and as the secrets of all the operations of gardening depend upon the presence or absence of peculiar circumstances, it is evident enough that an operation which if performed at one time is proper, and attended with success, may be performed in a precisely similar manner at another time, without being successful. Gardening is not an art, but a science.

There are many other ways of training the Peach-tree practised with success; but they belong rather to the experimentalist, and experienced horticulturist, than to those for whom these instructions are written. It will, therefore, be attended with no advantage to mention them further; especially as the various methods of fan-training, one of which has been explained, are preferable to all those to which we now refer.

The operation of summer pruning has already been incidentally mentioned; but it is so important an operation as to claim a more decided and definite explanation. Though called summer pruning, it should commence in the spring, and requires to be continued till after Midsummer. In performing it, no other instrument of manipulation should be made use of, than the thumb nail.

It must be recollected that pruning is not, under any circumstances, a natural process; it is, in fact, purely artificial, and is rendered necessary either from the confined limits within which it is convenient to permit plants to flourish, or from some cause incidental to the climate of this country, which does not, in all cases, permit the perfect growth and maturity of plants which naturally inhabit more genial climes. Hence pruning should be regarded more as a matter of necessity than of choice. Since, however, it is found to be an operation which is rendered indispensable by such causes as these, we must endeavour to ascertain the most favourable conditions upon which it may be carried out. Practice has ascertained this to consist in its performance at the earliest possible period from the time of development. The removal of a branch, or flower, or fruit, or leaf, which may require to be removed, can be best effected—with reference to the influence of the operation on the plant—at that period of their development when the removal can be effected with the smallest possible amount of labour; and hence it is that summer pruning should be assiduously carried out at an early period of that season, because the energies of the plant are by that means taxed in the least degree which it is possible to lay upon them.

It must, too, be borne in mind, that it is the very fact of pruning being an unavoidable operation, which renders it so important to give especial attention in the construction of the border in which the Peach-tree is planted. Were it to be planted in a deep, or moist, or rich soil, in which its growth would be luxuriant, the operation of pruning would tend to establish its barrenness, rather than to aid its fertility; this would be the certain consequence, because, if the roots were thus permitted to imbibe an unlimited supply of such aliment as would in that case be afforded them, it must find vent somewhere in the branches: and if one set of luxuriant and barren shoots were removed by pruning, it would only induce the development of others. Root pruning, ringing of the branches, boring, and bandaging, have been had recourse to as expedients, to counteract the bad effects of this confirmed luxuriant habit in the trees; but as these remedies are only superficial, and can never effect a permanent cure, in consequence of their not being directed towards the cause of the evil, they ought never to be practised; at the best, they are only mutilations, and deserve to be regarded as empirical and quackish, rather than as resulting from a knowledge of the structure and constitution of plants. It will be seen that the operations of gardening cannot be spoken of unconditionally, or detached from all bearing on other operations and circumstances: thus, pruning, which is an operation rendered necessary by obvious circumstances and conditions, and which, when skilfully regulated, tends to establish and maintain the fertility of a tree, is yet, nevertheless, attended with results, not only unsatisfactory, but in direct opposition to those which are sought, if a proper degree of attention is not at the same time directed to effect a balance between the limited capacities of the branches, and the source whence they derive their nourishment.

Possibly it may not be altogether useless to inquire briefly into the nature of the circumstances which justify the unintermitted performance of summer pruning. The production of fruit is the ultimate object in cultivating fruit-trees, and this result depends on the perfect elaboration and assimilation of the sap. Elaboration and assimilation depend, primarily, on the influence of heat and light; and, secondarily, on the surface of healthy foliage borne by the plants, in which the crude sap can be exposed to the influence of heat and light; assimilation does not depend on the number of the leaves borne, but on the extent of surface which they present to the action of light; and, consequently, when they are crowded together, they shade each other, and thus prevent the light from acting fully on their surface: hence the necessity of taking care to remove all those shoots which, not being actually required, would, if allowed to remain, only impede the action of these organs throughout the plant. But as the assimilation of the sap depends on this influence of light and heat on the greatest surface of healthy foliage which can be duly submitted to its action, and therefore it becomes necessary to prevent the shoots from becoming crowded, which would impede the necessary elaboration; so is it requisite that these useless shoots should be removed as early as their removal can be effected; because, if they are allowed to become developed they take up a portion of food which should be otherwise appropriated; and all the matter which is deposited in their elongation, and the formation of their leaves, is not only expended in vain, but is actually lost and abstracted from the plant when they are removed, at the same time that they have not been enabled to add to the deposit stored up in the plant, by reason of the limited term of their development. Neither could any advantage be derived from their presence, if they were suffered to remain, since they would tend to crowd together the organs of assimilation, and thus altogether to obstruct and impede their action. From the above considerations, we arrive at these conclusions:—that no greater number of shoots should be permitted to elongate than the space to be occupied will admit of their foliage being exposed to the light without overhanging each other, and thus preventing its access; that the removal of useless and unnecessary shoots should take place as nearly as possible to the time of their development; and that the supply of food to the roots, and its proper regulation, with regard to the capacities of the branches, is the proper foundation upon which the necessary operation of pruning should be made to rest.

As soon, therefore, as the buds begin to swell, a portion of the blossom buds should be removed from the tree; these may be distinguished from the leaf-buds by their being thick and blunt pointed. The first "dressing" should extend to the removal of one bud, wherever two blossom-buds are placed side by side on the shoot; the weakest and most unpromising should, of course, be removed. When the shoots are developed to about one inch in length, all of these, except the best-placed one at the base, as already mentioned, should be removed if they at all crowd the plant, or if they have no fruit or blossom attached to them; should this latter be the case, a few of the most inconveniently placed should be removed, and the remainder left, until it can be ascertained whether the fruit is likely to swell off; they should not, however, be allowed to grow beyond the development of two or three leaves, whether this point may be attained before or after the value of the blossom can be ascertained. Next, when the young fruit have attained the size of small beans, they should be looked over, and a few of the fruit removed, where they may appear to be crowded; and again, when about twice this size, a still further reduction must be made. When they have attained to about the size of a pigeon's egg, they must be finally regulated. The distance at which they may be left is a variable point: if the tree is vigorous, a heavy crop may be taken; if it is weakly, a much lighter crop only should be permitted to remain. A medium between these extremes is, to leave one fruit to come to perfection to about every square foot occupied by the tree; though this must by no means be taken as an infallible standard.

Whenever a leaf is observed having a warted or blistered appearance, it had better be removed: this is the work of insects, and the excrescence will serve as a subsequent shelter and habitation for others. If the insects Aphides take up their abode upon the trees, the young branches upon which they usually congregate should be taken between the thumb and finger, and the insects crushed; afterwards, a good washing with a garden engine, repeated every day or two, using pure soft water, will effectually dislodge them. The shoots which are retained for the next season's bearing, must, from time to time, be carefully nailed or fastened to the wall, which answers a two-fold purpose: the shoots are thereby secured from injury from storms of wind, and their maturity is assisted by the reflected heat of the wall, which they experience in a greater degree when quite contiguous to it. Nailing should be performed with a small shred and nail; but no compression whatever should be used on the shoot—it should be allowed two or three times its diameter, in order that it may swell out, without contraction or confinement from the shred.

About Midsummer a second growth generally takes place: it is equally requisite, still, to prevent a thick and crowded state of the shoots and leaves, and equally requisite to remove what requires removal; and this should be done by a continuous and constantly recurring care and attention, rather than by one or two severe and determined thinnings. These sudden changes are at all times injurious to the growth of plants, and may be considered as being especially so when young fruit are swelling off.

There are two other operations which it is necessary to refer to; these are, the protection of the blossoms in spring, and the watering of the border during the summer. The material most effective for the first of these objects is a loose kind of woollen net, the meshes of which are about half an inch apart. It may be applied thus:—from the top of the wall to the ground, at about 3 feet distant from the base, a series of stout straight rods should be placed; the net should be fastened at the top, and should extend downwards, resting on the rods, and covering about one-third of the height of the wall; at the lowest point to which it reaches it should be secured to the poles, so as not to be dislodged by the wind. The loose open nature of the material will admit sufficient light to penetrate, so that it may remain in this state until all danger of frost is over; its oblique position, with respect to the walls, will not only favour the admission of light and sun, but is effectual in guarding off spring frosts, whose influence is most commonly vertical; when this covering is removed it should be done gradually.

The necessity of watering the border during summer will depend entirely on the season: if this should chance to be dry and sunny, the border should receive two or three soaking waterings, during the early stages of growth; but if the season is damp and showery, it will not, probably, require any other watering: whenever it is done, it should be done effectually. The use of the garden engine can hardly be too frequently persevered in during fine weather, from the time the fruit is set, until it is approaching near maturity. It should be used towards the evening, or in dull cloudy weather, and never during bright sunshine. Its use will be to cleanse the branches and the leaves, which latter, as we have already seen, are the organs of respiration, from any filthiness or dust which may have lodged on them, and thereby tend to check the exercise of their functional duties; it will serve to dislodge any insects which may seek to establish themselves, and that in a far more rational and effective manner than by smearing the branches with any fœtid composition, with the view of rendering the tree nauseous to them; and as plants derive some portion of nourishment directly from their leaves, it will serve to present them, from time to time, with materials which they can appropriate to their use—for water, though apparently pure, does furnish nutriment to plants.

In ascertaining the ripeness of the fruit, it should not be pressed by the fingers, as is often done; but it should be gently lifted upwards, and if sufficiently ripe, it will be readily detached; on the other hand, if it is at all firmly attached, it is a certain sign that it is not sufficiently ripened.

The Peach-tree is not exempt from the attacks both of insects and disease. Among the former, the red spider and the thrip are the most troublesome; and, although they are very minute, yet their reproduction is so rapid, that they sometimes attain considerable numerical strength, and commit great devastation by feeding on the under part of the leaves, which then turn yellow and unsightly, and become unable to perform their proper functions. The presence of the insects in such swarms is, however, an index of neglect; for, if the trees are properly dressed from time to time, and the infested leaves removed, and if the engine is kept continually in use, they will be unable, under such circumstances, to establish themselves: where they have become established, it is almost impossible entirely to remove them; the best, though it is a filthy and unsightly means of annoying them, is to sprinkle the trees with diluted soap-suds; but this, besides being unsightly, is injurious, in a greater or less degree, by preventing the leaves from performing their proper office. Sulphur is sometimes applied as a remedy, but it is in many points objectionable; and its efficacy, at least, in out-of-door application, is highly questionable. Prevention is far easier and safer than any means of cure. Sometimes the trees are attacked by one or two species of Aphides; but they are far less liable to the attacks of these insects than many other trees: the infested parts should be removed, or they may be pressed between the fingers, so as to crush the insects, and then be submitted to a cleansing by pure water from the engine.

The principal diseases which attack the Peach-tree are the mildew, the gum, and the canker, under each of which names it is probable that many varieties of infection are included. As the attacks of insects arise chiefly from neglect of the plants themselves, so do the diseases to which they are subject arise, in a great degree, also from neglect; but, in this case, it is the conditions of growth which are not sufficiently attended to. Almost all diseases originate in the soil; or, in other words, it is the condition of the soil which renders the plants liable to the attacks of disease. Thus of the mildew, which is itself a parasitical fungus, growing on the live plant; it is the joint influence of too deep and too rich, or too moist a soil, aided by sudden changes, or unfavourable conditions of the atmosphere, which produce the circumstances that are favourable to the growth of mildew. Microscopical observations made by men of great talent and ingenuity, leave no doubt of the mildew being a fungus: but still the question remains,—where does this plant come from? No rational mind, with the evidence of the whole visible and material world about him, can believe that they spring of themselves; and it is, therefore, more rational to suppose (since we know, by the example of the common puff-ball, and others, that the reproductive atoms of fungi are minute and buoyant) that the germs of the mildew parasite, which is of quick growth, and soon bursts and disperses its sporules, are wafted in the atmosphere, and are lodged in many a situation as they may chance to be obstructed in their progress, but germinate only in those cases where they reach a medium which is suitable for their development. To place the mildew to the account of some evil in the border will not, therefore, be difficult. The leaves being too abundantly supplied from the roots, with the elements of their nutrition, which exist too plentifully in the border, and being excited into vigorous action by increased heat in the atmosphere, are suddenly checked in the exercise of their functions by a rapid fall of temperature, a decrease of light, or a change in the condition of the atmosphere: the roots not being subjected to the same influences, in any proportionate degree, continue in a vigorous state of action; and the sap, not being subjected to its proper elaboration in the leaves, finds a vent through their pores; here, on the surface of the leaf, it stagnates, and becomes morbid, and, in this condition, it appears to be highly favourable to the germination and growth of the fungus. This, however, is speculation, and speculative the subject must remain, since in these minute and mysterious matters we can scarcely arrive at ocular demonstration. Sulphur has been recommended as a cure for mildew; but its chief use would appear to be its action as an absorbent, and it, therefore, can have little influence on the disease itself: this should be prevented by attention to the method recommended in the construction of the borders; and it would seem to be removed from the plant, by the unflinching use of the engine at such times as the weather will admit of the leaves soon becoming dry after the application of the water.

The gum and the canker are also, without doubt, occasioned by the access of the roots to a large quantity of crude matter, which is absorbed by them, and conveyed to the branches. The canker, indeed, appears to be almost identical with the eruptions occurring on the leaves, and may, perhaps, be regarded as a more deeply-seated form of the same kind of disease. The exudation of gum is, doubtless, dependent on some abstruse chemical action, into which it would be uninteresting in this place to inquire. Certainly they both arise from repletion; and the success of any methods of cure will depend more on the use of proper regimen, than on the employment of any external and superficial applications.

THE CULTIVATION OF HARDY AND HALF-HARDY ANNUALS.

Annuals are among the most useful of flowering plants to the small gardener; useful, because they speedily produce a return for his labours, and that return but little, if any, behind in beauty the very choicest of Flora's gems. The blaze of beauty required in the gardens of aristocracy, could not be kept up without the aid of annuals; and no other race of plants is so well adapted to decorate the parterre of the cottage, because no other race calls for less of sedulous and officious care.

Annuals suitable for flowering in the open air, may be conveniently divided into two classes; viz. hardy and half-hardy.

Hardy annuals are such as may be sown at once with advantage in the open ground, as soon as the spring weather becomes a little settled in, and the ground becomes a little dried by the winds, and warmed by the rays of the sun; this generally happens by about the middle of March, or beginning of April; but it is also advisable to sow a few kinds even earlier, for the chance of having them sooner in bloom. Subsequently to the regular season for sowing, a small additional portion should be sown occasionally up to the middle of July; which latter will bloom late in the autumn. If required to be in bloom very early in the season, they may be sown in pots or boxes, in a gentle hot-bed, by the beginning of March, and in that case require protection in cold frames after they have grown and become established, until the middle or end of April, according to the season. Half-hardy annuals require in all cases to be sown in artificial heat; a very moderate degree of heat is however sufficient. We have represented this feature by the term half-hardy in the following list, instead of using the expression in its literal and accurate meaning; in the same way the term hardy has been applied to those in whose case it is less urgent, or for other reasons unnecessary or undesirable that they should be raised in artificial heat; with this explanation, the terms themselves, in the use to which they are here applied, will not be misunderstood. With half-hardy annuals, the most usual and convenient plan is to sow the seeds in shallow pots or pans, in light soil, covering them according to their size, and placing them in a hot-bed frame where the heat is partly spent. When the seed has germinated, and the seed-lobes are fairly expanded, the young plants should be "pricked out," or transplanted into other pots or pans of light soil, at a little distance asunder, and be returned to the frame. Subsequently, when a little larger, they should either again be planted more thinly in pots or pans, or, what is better, one or three plants put into a small sixty-sized pot; in either case they must be gradually inured to bear full exposure by the end of April; the small pots are preferable, because the plants can be at once transferred from them to the open border, without having their roots disturbed; but the others having been twice transplanted will not be much injured by careful removal. The beginning of May, if the weather is fine and open, is usually regarded as the best time for planting out; though if any particular object be in view, they may be prepared for earlier planting out, and will succeed if protected a little, should it be found necessary.

To maintain a succession of bloom, a little seed should be sown every month or so, of the few kinds which may be selected to be grown, and these will come into bloom as the others decay; of course, in the case of half-hardy kinds, it is only in the earlier part of the year that they require sowing in pots, or in heat.

In the case of seeds sown in the open ground, there is one important point requires attention, and that is the thinning of the plants in their earliest stages; it is always desirable to sow thicker than the plants are required, as a precaution against the vicissitudes that stand in the way of success; but if the young plants are allowed to remain in a crowded state, they soon spoil each other. They must, therefore, be thinned, but not, however, incautiously. Remove at first only enough to give the remainder clear space to grow in; slugs may eat some of those retained, and various accidents may befal others; it will be sufficient if they are finally thinned when two or three inches high; and prior to that time, they should be kept clear of each other. The number of plants finally left should depend on the size and habit of the kind: if large and spreading, single plants are best; if not spreading, two or three may remain, placed of course at equal distances apart; if small and spreading, two or three, or more, may be left; and if minute, there need scarcely be any limit in number. But all this regulation and arrangement is useless without observing this rule:—commence thinning in time, that is, before they become crowded.

Annual plants of large growth, and upright habit, require support; but a single stake of neat form and dimensions should alone be used, and that to support only the main stem; the branches should be allowed to grow out naturally without restraint. Some of the slender delicate kinds require the same kind of support. Those of compact, bushy habit, require no interference whatever, except stopping an occasional straggling shoot in the earlier stages of growth. Prostrate kinds require their branches sometimes to be thinned and regulated; and they may be fastened to the ground with small hooked pegs with advantage, as it keeps them from being blown about by the wind. Climbing plants must be provided with a twiggy branch or two, larger or smaller, according to their character. This is the kind of attention, in the way of support, required by annual plants.

Cultural points need not be particularized: every one would destroy weeds, and prevent them from choking his flowers; every one would administer water in times of drought. Seed saving should seldom be resorted to by amateurs, as it involves much trouble, and his fading blossoms and plants ought to be removed before they can ripen their seed; the only cases where it is desirable, is where particularly striking varieties may be observed, and in these cases it is quite proper to endeavour to perpetuate them.

For very early flowering in spring, a few of the kinds, showy in their character, and hardy enough in their constitution to render it probable they may survive through the winter, may be sown in the autumn, about the middle of September, in a sheltered situation. The same object may be aimed at, with a greater chance of success, by sowing in pots, boxes, or pans, at that time, and preserving them in frames during the winter. In the latter case they require repotting in spring, and growing to some size whilst protected in the frames, previous to the time when it would be safe to plant them out. For sowing out of doors, the following sorts are suitable :—Collinsia bicolor, and C. grandiflora; Collomia coccinea; Gilia tricolor and G. achillæfolia; Escholtzia crocea; Erysimum Peroffskianum; Malcomia maritima; Limnanthes Douglasii; Nemophila insignis; Silene pendula; Iberis odorata, and I. umbellata. Any of the better class of annuals are suitable for sowing to protect by means of the frames.

In the following list, the usual time of flowering is given; but that and the height named may be taken as a medium, from which they will vary more or less, according to the soil and situation.

SELECT AND DESCRIPTIVE LIST.

Those marked thus (*) are a selection of the most useful and ornamental kinds. Those marked thus (†) are the most recent.

Ageratum Mexicanum, (Mexican Ageratum.)—Half-hardy; habit upright, branching; pale blue flowers, like little bunches of short blue threads; large, nearly oval leaves; height, one foot and a half. Flowers in July and August.

Amethystea cœrulea, (Skyblue Amethystea.)—Hardy; habit branching; flowers blue, something in the way of the preceding; height, two feet. Flowers in July and Aug.

Anagallis carnea, (Flesh-coloured Anagallis.)—Hardy; habit trailing; leaves small; flowers small, round, flesh-coloured; height, six inches. Flowers in July and August.

Anagallis Indica, (Indian Anagallis.)—Hardy; habit trailing, like the last, but with blue flowers; suitable for beds. Flowers in July and August.

Argemone Mexicana, (Mexican Argemone.)—Hardy; habit erect, branching; with thistle-like leaves, and large yellow poppy-like flowers; height, two feet. Flowers in Aug.

Argemone grandiflora, (Large-flowered Argemone.)—Hardy; similar to the last, but with large white flowers; height, two feet. Flowers in August.

Aster tenellus, (Slender Aster.)—Half hardy; habit dwarf, and compact; leaves finely divided; flowers composite,* varying in colour from nearly white to deep lilac; height, six inches; suitable for edgings or beds. Flowers in August and September.

*Bartonia aurea, (Golden Bartonia.)—Half-hardy; habit spreading, dwarf; with oblong leaves, and large cup-shaped brilliant yellow flowers, filled with numerous little threads; height, one foot; suitable for beds. Flowers from July to September.

Blumenbachia insignis, (Beautiful Blumenbachia.)—Half-hardy; habit trailing; leaves small, and the stems are furnished with stinging hairs; flowers pretty, white and orange; height, six inches. Flowers in Aug.

Brachycome iberidifolia, (Swan Daisy.)—Half-hardy; habit erect, branching; finely-cut narrow leaves, and composite flowers; they vary in colour from blue, through pink, to white; height, foot and half; suitable for beds. Flowers from July to September.

Briza maxima, (Quaking Grass.)—Hardy; habit upright; bearing large drooping scaly heads of bloom, interesting from the graceful and elegant manner in which they hang; height, one foot. Flowers in August.

*Cacalia coccinea, (Scarlet-flowered Cacalia.)—Hardy; habit branching; the broad leaves are situated in a tuft near the ground, and the flower-stalk rises erect, and becomes branched; the flowers are deep orange or scarlet, and are formed of numerous short-quilled or thread-like florets, arranged together into little heads; height, about a foot. Flowers in August and September.

*Calandrinia speciosa, (Beautiful Calandrinia.)—Half-hardy; habit trailing; leaves narrow; flowers small, cup-like, bright rose colour; suitable for rocky banks and beds much exposed to the sun; the flowers are very brilliant in sunshine; height, six inches. Flowers in July and August.

*Calandrinia discolor, (Two-coloured Calandrinia.)—Half-hardy; habit upright, slightly branching; leaves spathulate, succulent, purplish beneath; flowers large, cup-shaped, rose coloured; requires a warm dry situation; height, two feet. Flowers in July and August.

*Calandrinia grandiflora, (Large-flowered Calandrinia.)—Half-hardy; much resembles the last in every particular.

*Calendula officinalis, (Common Marigold.)—Hardy; habit spreading; leaves oblong; flowers large, composite, deep orange colour; height, one foot; one of the best orange-coloured annuals, and suitable for beds; very hardy, and generally comes up self-sown in places where it has been once grown. Flowers from July to September.

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* Composite flowers will be understood by referring to the common daisy, the single dahlia, &c.

Calendula pluvialis, (Cape Marigold.)—Hardy; habit dwarf, spreading; leaves oblong; flowers large, composite, white, the back of the flower brownish; height, one foot. Flowers in August.

*Callichroa platyglossa, (Broad-rayed Callichroa.)—Half-hardy; habit dwarf, and spreading; leaves linear; flowers large, composite, pale yellow, whitish near the centre; height, one foot. Flowers in August and September.

*Calliopsis bicolor, (Two-coloured Faireye.) — Half-hardy; habit erect, much-branched, slender; leaves finely divided; flowers large, composite, yellow, with a dark brown centre; height, two to three feet. Flowers from July till October. There are some varieties: C. b. atrosanguinea has flowers nearly all deep chocolate red coloured; C. b. grandiflora has flowers much larger than the species, and of similar colour.

*Callistemma hortense, (China Aster.)—This is too well known to need describing. Flowers in August. There are numerous varieties, of almost every shade of colour, and some beautifully quilled, and others double; the seed imported from Germany, if obtained true, produces very fine flowers; half-a-dozen varieties, very distinct in colour, may be selected, and this would be found more satisfactory than growing a larger number.

*Campanula Lorei, (Lore's Bell-flower.)—Hardy; habit dwarf, compact; flowers large, bell-shaped, with five pointed segments; lilac, varying in shade; height, one foot; suitable for beds. Flowers in August. There is a white-flowered variety.

Carthamus tinctorius, (Bastard Saffron.)—Hardy; habit erect; leaves broad, oblong; flowers formed of forked threadlike tubes, in large heads, orange or saffron coloured; height, four feet. Flowers in August.

Centaurea cyanus, (Corn Bottle.)—Hardy; habit erect; leaves long, narrow, whitish; flowers resembling the last in shape, but smaller, and more regularly formed, bright blue; height, three feet. This varies in colour: there are white, and purple, and intermediate shades. Flowers in August.

Centaurea depressa, (Dwarf Centaurea.)—Hardy; habit, dwarf; leaves broader than the last; flowers like the last, bright blue; height, foot and a half. Flowers in July and August.

Cladanthus Arabicus, (Arabian Cladanthus).—Half-hardy; habit dwarf, rather forked, the flowers situate in the forks; leaves narrow; flowers composite, large, yellow; height, one foot; useful for beds. Flowers in July.

*Clarkia pulchella, (Pretty Clarkia.)—Hardy; habit erect, a little branched; leaves willow-like; flowers of four spreading petals, each formed of three forked narrow lobes, rose coloured; height, foot and half. Flowers in June and July. There are varieties with larger, with white, with fringed, and with double flowers: all are well suited for beds, and are very showy.

Clarkia elegans, (Elegant Clarkia.)—Hardy; habit taller than the last, and a little more inclined to branch; flowers of four spreading petals, each with a broad rounded apex, light rose coloured; height, two feet. Flowers in June and July. There are varieties of this with deeper coloured, and with double flowers; all are well suited for beds.

Clintonia pulchella, (Pretty Clintonia.)—Half-hardy; habit trailing; leaves small, narrow; flowers somewhat ringent, blue, white, and yellow; height, four inches. A very handsome plant for beds or edgings; grows best in cool moist places, rather sheltered. Flowers in June and July.

*Collinsia bicolor, (Two-coloured Collinsia.)—Hardy; habit erect; leaves acutely triangular; flowers ringent, white and lilac; height, foot and a half to two feet; very handsome, both when grown singly and in beds. Flowers in June and July.

*Collinsia grandiflora, (Large-flowered Collinsia.)—Hardy; habit dwarf, spreading; leaves narrow; flowers same shape as the last, purple and blue; height, one foot; admirably suited for beds. Flowers in June and July.

Collomia coccinea, (Scarlet Collomia.)—Hardy; habit erect; flowering at the top; leaves long and narrow; flowers star-shaped, dull scarlet; will stand well through the winter; height, one foot. Flowers in July.

Collomia grandiflora, (Large-flowered Collomia.)—Hardy; habit same as the last; flowers buff-coloured, or dull orange. Flowers in July.

Convolvulus tricolor, (Convolvulus minor.)—Hardy; habit spreading, diffuse; leaves oblong; flowers bell-shaped, blue, white, and yellow; height, foot and a half. Flowers in July and August.

Cynoglossum linifolium, (Venus' Navelwort.)—Hardy; habit dwarf, spreading; leaves narrow; flowers small, white, in dense heads; keeps blooming a long time, and on that account useful for beds; height, one foot. Flowers in June and July.

*Delphinium Ajacis, (Dwarf Larkspur.)—Hardy; habit erect, flowering almost in a spike; leaves finely cut; flowers of many colours—white, purple, rose, and various intermediate shades; height, one foot; the double varieties make handsome beds. Flowers in July.

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* Ringent, or gaping flowers, are such as are shaped something like those of the snapdragon, and the monkey-flower, &c.

DELPHINIUM CONSOLIDA, (Branching Larkspur.)—Hardy; habit much branched; leaves finely cut; flowers various in colour, very showy, especially the blue variety; height, two feet. Flowers in July and August.

ERYSIMUM PEROFFSKIANUM, (Peroffski's Erysimum.)—Hardy; habit erect; flowering in a long spike, like a single yellow wallflower; flowers cruciform, deep orange; height, foot and a half; useful for beds on account of its distinct orange colour. Flowers in June.

ESCHOLTZIA CROCEA, (Saffron-coloured Escholtzia.)—Hardy; habit spreading; leaves finely cut; flowers large, poppy-like, deep orange; height, one foot; useful for beds. Flowers in July and August.

ESCHOLTZIA CALIFORNICA, (Californian Escholtzia.)—Hardy; habit and other particulars like the last, except the colour, which is yellow. Flowers in July and August.

†EUCHARIDIUM CONCINNUM, (Neat Eucharidium.)—Hardy; habit erect; resembles Clarkia in general appearance, but smaller; flowers pink, or light rose; height, one foot. Flowers in July.

*EUTOCA VISCIDA, (Viscid Eutoca.)—Hardy; habit erect, branching; leaves broad; flowers of five roundish petals, deep blue, with a white centre; height, foot and a half. Flowers in July and August.

†EUTOCA WRANGELIANA, (Wrangel's Eutoca.)—Hardy; habit prostrate; leaves roundish; flowers in compact heads, dull dark lilac; height, one foot. Flowers in June and July.

GILIA ACHILLÆFOLIA, (Milfoil-leaved Gilia.)—Hardy; habit erect; leaves finely cut; flowers of five petals, blue; height, one foot; suitable for beds. Flowers in June and July.

*GILIA TRICOLOR, (Three-coloured Gilia.)—Hardy; habit like the last, but the flowers are lilac, with a dark eye, and blue anthers; height, one foot; beautiful for beds. Flowers in June and July. There is a variety with the ground colour white.

†GILIA TENUIFOLIA, (Slender-leaved Gilia.)—Hardy; habit upright, loose; leaves very slender; flowers pink, rather straggling; height, foot and a half. Flowers in July.

GILIA CAPITATA, (Close-headed Gilia.)—Hardy; habit erect, branching; leaves finely cut; flowers small, in dense round heads, pale blue; height, two feet. Flowers in July. There is a white variety.

*GODETIA BIFRONS, (Two-spotted Godetia.) Hardy; habit erect; leaves narrow; flowers cup-shaped, pale rosy lilac, with deep crimson spots on each petal; height, two feet. Flowers in July. G. Lindleyana is spotted similar to this; and G. rubicunda, G. vinosa, G. roseo-alba, and some others, are blush red, differing in the shade of their colour.

GODETIA PURPUREA, (Purple Godetia.)—Hardy; habit, &c., similar to the preceding; flowers pale purplish rose; height, foot and a half. Flowers in July.

GODETIA ROMANZOVII, (Romanzow's Godetia.)—Hardy; habit, &c., as before; flowers bluish, with blue anthers; height, one foot. Flowers in July.

GYPSOPHILA ELEGANS, (Elegant Gypsophila.)—Hardy; habit prostrate, diffuse; leaves linear; flowers small, numerous, whitish; height, nine inches; very pretty. Flowers in June and July.

HELIANTHEMUM GUTTATUM, (Spotted Helianthemum.)—Hardy; habit prostrate; leaves narrow; flowers small, flatly cup-shaped, yellow, with a dark spot on each petal; height, six inches; adapted for sunny banks, or sunny rocks. Flowers in July.

HELICHRYSUM MACRANTHUM, (Large-flowered Everlasting.)—Hardy; habit erect; leaves narrow; flowers round, spreading, white, with rose tips; height, two feet. Flowers from August to October. These are some of the large garden Everlastings.

HELICHRYSUM BRACTEATUM, (Yellow Everlasting.)—Hardy; similar to the last, but the flowers yellow. Flowers from August to October. There is a variety with silvery white flowers. They are all useful plants.

HELIOPHILA ARABOIDES, (Arabis-like Heliophila.)—Half-hardy; habit erect, a little branched; flowers cruciform, blue, opening in the sun; height, nine inches. Flowers in July. There is a variety with hairy leaves.

HIBISCUS AFRICANUS, (African Hibiscus.)—Half-hardy; habit erect; leaves lobed; flowers large, mallow-like, cream-coloured, with rich brown around the centre; height, foot and a half. Flowers in July.

IBERIS ODORATA, (White Candytuft.)—Well known; a free flowerer, and useful on that account; height, one foot. Flowers in June and July.

IBERIS UMBELLATA, (Purple Candytuft.)—Similar to the preceding, but with purple flowers. Flowers in June and July.

†IMPATIENS GLANDULIGERA, (Glandular Indian Balsam.)—Half-hardy; habit erect, branching, forming a large bushy plant; leaves large, long, narrow; flowers purple, of a singular hood-like form; height, three feet. Flowers in August and September.

†IMPATIENS CANDIDA, (Whitish Indian Bal-

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* Cruciform flowers will be quite understood by a reference to a single stock or wall-flower.

sam.)—Half-hardy; similar to the last; flowers white. Flowers in August and September.

Ipomæa purpurea, (Convolvulus major.) Half-hardy; habit climbing; leaves heart-shaped; flowers bell-shaped, of various colours. Flowers from July to October. There are some with white flowers; others of purple, blue, rose, pink, and blush colour; others with white ground, marked with delicate blue stripes. The latter are very pretty.

*Kaulfussia amelloides, (Amellus-like Kaulfussia.)—Half-hardy; habit dwarf, compact; leaves oblong; flowers large, pale blue, composite; height, nine inches; adapted for beds or edgings. Flowers in July and August.

Koniga maritima, (Sweet Alyssum.)—Hardy; habit dwarf, spreading, and bushy; leaves narrow; flowers small, white, in dense spikes, produced in great profusion, and smelling strongly like honey; height, one foot; makes very handsome beds. Flowers in June and July.

Lasthenia Californica, (Californian Lasthenia.)—Hardy; habit spreading; leaves narrow, smooth; flowers small, composite, yellow; height, nine inches; common-looking but useful from being hardy, and a free flowerer. Flowers in August. L. glabrata is very similar.

Lathyrus odoratus, (Sweet Pea.)—This well-known and deserving favourite is, among other situations, adapted for sowing in thick rows, for the purpose of forming temporary hedges: there are varieties of several distinct colours; height, about three feet. Flowers from July till September.

Lavatera trimestris, (Three Months' Lavatera.)—Hardy; habit spreading; leaves roundish; flowers cup-formed, flesh-coloured; height, two feet and a half. Flowers in June and July. There is a variety with white blossoms.

*Leptosiphon androsaceus, (Androsace-like Leptosiphon.)—Half-hardy; habit dwarf, slender; leaves very small; flowers gilia-like in form, of a fine purplish lilac colour; height, six to nine inches. Flowers in July. There are several variations in the colouring: suitable for beds.

*Leptosiphon densiflorus, (Close-flowered Leptosiphon.)—Similar to the last, but of rather larger stature, and having larger rosy lilac flowers; height, one foot; excellent for beds. Flowers in July.

Linaria purpurea, (Purple Toadflax.)—Hardy; habit erect; leaves narrow; flowers ringent, purplish lilac; height, one foot. Flowers in July.

†Linaria Perezii, (Perez's Toadflax.)—Hardy; habit erect; leaves narrow; flowers ringent, yellow; height, one foot. Flowers in July.

Limnanthes Douglasii, (Douglas' Limnanthes.)—Hardy; habit prostrate; leaves divided; flowers flat, white, the lower half of each petal pale yellow; height, six inches; not very showy but very hardy. Flowers in June and July.

Loasa tricolor, (Three-coloured Loasa.) Hardy; habit spreading, straggling; leaves angular, and, together with the stems, furnished with stinging hairs; flowers yellow and red; height, two feet. Flowers in July and August.

*Lobelia gracilis, (Slender Lobelia.)—Half-hardy; habit prostrate, spreading; leaves small; flowers pale blue; height, nine inches; excellent for beds, edgings or rock-work; blooms in July, and continues a long time in bloom. There is a white variety.

†Lobelia ramosa, (Branching Lobelia.)—Half-hardy; habit erect, branching; leaves forked like a stag's horn; flowers dark rich blue; height, one foot. Flowers in July and August.

Lopezia coronata, (Crowned Lopezia.)—Hardy; habit spreading, branching; leaves oval; flowers pink, the two upper petals standing out like horns; height, foot and a half. Flowers in July.

Lopezia racemosa, (Branching Lopezia.) —Hardy; habit spreading, branching; leaves oval; flowers pink, similar to the last; height, foot and a half. Flowers in July.

Lupinus, (the Lupine.)—These produce spikes of pea-shaped flowers; L. mutabilis, whitish; and L. Cruckshankii, blue, grow three feet high. L. hirsuta, blue; L. roseus, rose; L. albus, white; and L. lutea, yellow, are the sorts commonly seen: they grow from a foot to a foot and a half high. †*L. Hartwegii, L. Mexicanus, L. bicolor, L. rivularis, and some others, are more recent; principally bluish in colour, and about the same height. *L. nanus is a pretty dwarf kind, suitable for beds or rock-work, with purple and blue flowers. They are all hardy. Flowers from July till September.

Lychnis Cœli-rosa, (The Rose of Heaven.) Hardy; habit erect, slender; leaves narrow; flowers large, broad and flat, flesh-coloured; height, foot and a quarter. Flowers in July.

Madia elegans, (Elegant Madia.)—Half-hardy; habit erect, branched; leaves long, narrow; flowers composed of numerous narrow yellow petals, with a brown centre; height, two feet and a half. Flowers in July and August.

Malope trifida, (Trifid Malope.)—Hardy; habit erect; leaves roundish; flowers cup or bell-formed, purple crimson; height, two feet. Flowers in July and August.

*Malope grandiflora, (Large-flowered Malope.)—Similar to the last, but larger, and with more showy flowers. Flowers in July and August. There is a white variety.

†Martynia fragrans, (Fragant Martynia.)—Half-hardy; habit erect, spreading; leaves large, lobed; flowers large, spreading, ringent, rich purple crimson; height, two feet. Flowers in August; very fragrant; frequently grown in a green-house, but does better out of doors.

*Mathiola annua, (Ten-weeks Stock.)—Half-hardy; habit branching; leaves oblong; flowers cruciform, in spikes; height, a foot and a half. Flowers from May; the double varieties, of various colours, are very ornamental, especially that called the "Scarlet." There are numerous varieties imported from Germany, of various odd-looking colours, which usually come very fine from the imported seed, but dwindle when the seed is saved in this country. The most distinct of them are the dark carmine, dark blue, light blue, crimson, dark crimson, peach blossom, rose coloured, violet, yellowish, and white. To obtain a good proportion of double flowers, seed should be saved from those flowers that bloom with five or six petals, the tendency towards a multiplication of parts being commenced in these flowers, and generally becoming more or less communicated to the progeny.

Malcolmia maritima (Sea-side Malcolmia.)—Hardy; habit spreading; leaves oblong; flowers cruciform, rose coloured; height nine inches. Flowers in May; one of the earliest flowering of all annuals from the time of sowing, and very hardy; useful for beds to flower very early in the spring.

Nemesia floribunda, (Many-flowered Nemesia.)—Half-hardy; habit erect; leaves ovate; flowers ringent, white, with a yellow central blotch; height, nine inches. Flowers in July.

*Nemophila insignis, (Beautiful Nemophila.)—Hardy; habit prostrate, spreading; leaves scolloped or cut; flowers cup-shaped, blue, with white centre; height, one foot; quite hardy and good for beds. Flowers in June. There is a variety of this called major, or grandiflora, with large flowers.

*Nemophila atomaria, (Dotted Nemophila.)—Similar to the last, but with smaller white flowers, dotted all over with small specks; suitable for beds. Flowers in June.

†Nemophila discoidalis, (Black-disked Nemophila.)—This has flowers of a deep-chocolate, almost black, with a narrow white edging; out of doors it is far from being showy. Flowers in June.

Nolana atriplicifolia, (Atriplex-leaved Nolana.)—Half-hardy; habit prostrate; leaves ovate; flowers bell-shaped; blue and white, in the way of Convolvulus tricolor; height, six inches. Flowers in July and August.

Nolana prostrata, (Prostrate Nolana.)—Similar to the last, but with plain lilac-blue flowers. Flowers in July and August.

Oxyura chrysanthemoides, (Chrysanthemum-like Oxyura.)—Hardy; habit erect; leaves finely divided; flowers large white, composite; height, one foot. Flowers in July and August.

*Petunia.—The Petunias, though not strictly annuals, are best when treated as the half-hardy ones; they are very showy, some white, some rose, with all the intermediate shades; height, two feet; make beautiful beds. Flower from July till October.

Papaver somniferum fl. pleno, (Double Poppy.)—Hardy; habit erect; smooth and whitish all over, with large double fringed flowers; height, two and a half feet. Flowers in July. There are varieties of this, of all shades of colour, from white and rose to blackish purple, and some prettily margined.

Papaver Rhæas fl. pleno (Chinese Poppy.)—Hardy; habit erect, smaller than the last, and hairy; flowers thinner of petals, which are quite smooth on the edge; the colours of this are likewise various; height, two feet. Flowers in July.

Phacelia tanacetifolia, (Tansy-leaved Phacelia.)—Hardy; habit branched and spreading; leaves finely cut; flowers in heads like the Heliotrope, bluish lilac; height, a foot and a half; a very free flowering kind. Flowers in July and August.

*Phlox Drummondii, (Drummond's Phlox.)—Half-hardy; habit spreading and bushy; leaves narrow and pointed; flowers round and flat, in small bunches; there are varieties of all shades of pink, crimson, lilac, and purple; height, a foot and a half. Flowers from July to September. This is one of the most beautiful of all the annuals for beds, or as single plants, producing its flowers in unlimited profusion.

Platystemon Californicum, (Californian Platystemon.)—Hardy; habit dwarf compact; leaves nearly ovate; flowers buttercup-shaped, pale lemon coloured; height, six inches; a delicate and interesting little plant, but not particularly showy. Flowers in July.

Podolepis gracilis, (Slender Podolepis.)—Half-hardy; habit erect, branching; leaves rather narrow; flowers pale rose; height, nine inches. Flowers in July.

Polygonum orientale, (Persicaria.)—Hardy; habit erect, spreading, the branches gracefully drooping; leaves large oval; flowers red, in small dense drooping spikes; height, four to five feet. Flowers in August and September. A few plants of this, where there is room for it, have a very ornamental appearance.

†Portulaca splendens, (Splendid Purslane.)—Half-hardy; habit spreading; leaves

quill-shaped, succulent; flowers large, like a Mesembryanthemum, rosy crimson; height, six inches. Flowers in August.

†Portulaca Thellusoni, (Thelluson's Purslane.)—Half-hardy, and in every respect, except colour, similar to the last; colour orange scarlet. Flowers in August. These two plants are suitable for rock-work and banks, in sunny places, and for very snug warm corners.

Prismatocarpus speculum, (Venus' Looking-glass.)—Hardy; habit bushy; leaves small, narrow; flowers cup-formed, with the top contracted; height, one foot. Flowers in July and August. Several varieties of different colours exist.

Reseda odorata, (Mignionette.)—Every body's favourite.

Rhodanthe Manglesii, (Captain Mangles' Rhodanthe.)—Half-hardy; habit erect, branching at top; leaves oblong, glaucous; flowers drooping, everlasting, a beautiful light rosy pink; height, nine inches to one foot. Flowers in July. A little gem.

Saponaria Calabrica, (Calabrian Soapwort.)—Hardy; habit dwarf, bushy, and producing an abundance of pretty round, five-petaled, pink flowers; height, nine inches. Suitable for beds. Flowers in July and August.

Schizanthus pinnatus, (Pinnate-leaved Schizanthus.)—Half-hardy; habit erect, branching; leaves finely cut; flowers spreading, lilac, with purple and yellow; height, a foot and a half. Flowers in July and August.

*Schizanthus pinnatus humilis, (Dwarf pinnated Schizanthus.)—Half-hardy; habit same as last, but more dwarf; flowers with red intermixed; height, one foot. Flowers in July and August.

Schizanthus Priestii, (Priest's Schizanthus.)—Similar, but with white flowers, and yellow centre. Flowers in July and August

Schizanthus venustus, (Beautiful Schizanthus.)—Similar; with flowers of darker shades than in S. pinnatus humilis. Flowers in July and August. The Schizanthus are all well suited for pots for the green-house, and succeed well out of doors in warm sheltered situations, and on light soils.

Schizopetalon Walkeri, (Walker's Schizopetalon.)—Half-hardy; habit straggling; flowers cruciform, brown on the outside, white inside, fringed, beautifully scented in the evening; height, two feet. Flowers in July and August.

*Silene pendula, (Pendulous Catchfly.)—Hardy; habit dwarf, very bushy; leaves oblong; flowers round, flat, five-petalled, pink; height, one foot. A most abundant flowerer, continuing a long time in bloom, and very hardy, standing through the winter; makes fine beds. Flowers in June and July.

*Sphænogyne speciosa, (Showy Sphænogyne.)—Half-hardy; habit erect; leaves finely cut; flowers large, composite, buff or dull orange, with a black centre; height, one foot; very showy, and suitable for beds. Flowers in June and July.

Tagetes patula, (French Marigold.)—Half-hardy; habit dwarf and spreading; well known; the double varieties, especially the striped one, are very handsome. Flowers in August and September.

Tagetes erecta, (African Marigold.)—Half-hardy; habit erect, unbranched; the double orange and lemon-coloured varieties are very showy. Flowers in August and September.

Tolpis barbata, (Yellow Hawkweed.)—Hardy; habit spreading, rather straggling; leaves oblong; flowers flat, round, of numerous narrow notched petals, pale yellow, dark in the centre; height, one foot. Flowers in July and August.

Tropæolum aduncum, (Canary flower.)—Half-hardy; habit climbing; leaves lobed; flowers yellow, fringed, having a fanciful resemblance to a canary-bird in the act of flying; a vigorous growing plant, and well adapted for ornamenting trellis work, screens, &c. Flowers from July till September. This is sometimes called T. peregrinum, and T. Canariense, the latter a corruption of the common name of Canary flower, which it receives in Gibraltar. T. Smithii is scarcely, if at all, different.

Tropæolum majus, (common Nasturtium.)—Hardy; habit climbing; leaves round, attached behind to the stalk; flowers large, orange coloured; suitable for climbing over rough fences, &c. Flowers from July till September. A variety, with dark flowers called atrosanguineum, and another with yellow flowers, having fine dark spots, called Shillingi, are very distinct and ornamental.

Tropæolum minus, (Smaller Tropæolum).—Half-hardy; less than the last in every particular; flowers orange coloured, handsome. Flowers from July till September.

†Viscaria oculata (Dark-eyed Viscaria.)—Hardy; habit spreading, bushy; leaves long, narrow; flowers round, nearly flat, lilac, with dark edge; height, foot and a half; rather pretty. Flowers in July and August. Lychnis Cœli-rosa is also known as Viscaria Cœli-rosa.

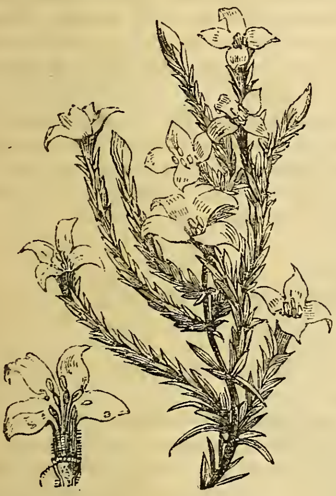
Xeranthemum annuum, (Purple Everlasting.)—Hardy; habit erect, branched; leaves narrow, pointed; flowers spreading, purple; height, two feet. Flowers in August. There is a white variety of the same habit. It is rather a coarse looking flower.

Zinnia elegans, (Elegant Zinnia.)—Half-hardy; habit quite erect; leaves oblong, rounded; flowers round, of numerous narrow petals; height, two feet. There are varieties with scarlet, crimson, purple, lilac, white, and yellow flowers. Flowers in August.

CRYPTADENIA UNIFLORA OF MEISNER.

ONE-FLOWERED CRYPTADENIA.

This plant, together with two nearly allied species, have been removed by Professor Meisner from the Linnæan genus Passerina, and formed into a genus under the distinctive title of Cryptadenia, applied to them in allusion to the *concealed glands* which are situated within the tube of the flower. These are seen in the detached flower in our engraving, which is laid open to show the arrangement of their parts. The other species of Passerina, now called Cryptadenia, are P. grandiflora, and P. ciliata. The present plant, though for many years known in the condition of dried specimens, and cultivated since the year 1759 in the royal garden at Kew, is yet at the present day comparatively scarce, notwithstanding that it possesses considerable beauty; and is, moreover, deserving of cultivation both on account of the profusion in which its blossoms are produced, and the length of time the plant continues in a blooming condition.



Cryptadenia uniflora is a small twiggy, heath-like plant, with linear acute leaves, and producing its hypocrateriform pinkish lilac flowers singly, at the ends of the little twigs which are produced thickly towards the ends of the shoots: the flowers (hypocrateriform) have a small narrow tube, and a spreading limb, consisting of four ovate acute segments; this form of the flower will be easily understood by the engraving. It is a native of the Cape of Good Hope, and in the royal garden at Kew it flowers during the early summer months. It belongs to the natural order Thymeleæ.

With the other plants belonging to this natural order, this would doubtless associate in cultivation. An airy part of the green-house is found to be most suitable for it; and a compost of equal parts of sandy loam and peat, together with well-drained pots, will be required. It is also essential, that during all the early stages of growth the branches should be frequently and fearlessly stopped—that is, have the tops of the young shoots removed before they are much elongated. It is, moreover, requisite that the plants should be submitted to as much light as possible during their growth, and especially to solar influence when it is completed, for the purpose of sufficiently maturing it.

THE ONE-SHIFT SYSTEM OF POTTING.

After much argument, and some heat, exhibited by the advocates and opponents of this system, the matter seems by universal consent to resolve itself into this; that there are some plants which grow better in large pots than small ones, whilst others will not. That in a general way, the shifts from one pot to another are too small; that one shift from the first pot to the one they are to bloom in, is sufficient for annuals. This is all we can gather from the speeches and the writings about the one-shift system; but now that complaints are made that a vast number of valuable plants have been sacrificed by the adoption of the system, it becomes necessary to inquire whether they have been fairly treated. In one establishment we observed twenty or thirty noble heaths dead. They were said to have been killed by the one-shift system. We are no advocates for the system, but there was nothing so wrong as to attribute their death to it. The fact was, that the plants having grown for years, and filled a dozen pots one after another, until the balls about their roots were all matted and hard, had been removed on a sudden into tubs and pots of enormous size. Now the one-shift system means, that a plant, with its roots unconfined, shall be put into the largest pot it is intended to grow in, and there is no doubt that if the proper conditions be supplied, it will flourish until it fills the pot with roots, and arrives at perfection. It is perfect nonsense to suppose that the merely taking a plant out of, perhaps its tenth pot, and putting it into a large tub, has anything to do with a system, the very name of which implies that we are to begin with a rooted cutting. We, however, condemn the notion altogether, that any system can be good for all plants, any more than any medicine can be good for all disorders. It is the worst thing that can be done for science, to set up a novel practice, and say it is right for every thing: plants are as various in their constitutions as animals. and it is worse than folly to suppose any system can apply well to all of them. There are weighty objections to the one-shift system as a general thing; first, because all the time a plant is growing it is useless until it arrives at the size when it is a match for the pot; secondly, the enormous disproportion of the pots to houses of present construction would curtail the number of plants to be grown in the proportion of five-sixths; thirdly, it deprives us of the enjoyment of the beautiful plants which bloom when small, and continue to bloom annually for many years before they arrive at their full size. Let us take the subjects of heaths, which from the time they are in good proportion to a forty-eight sized pot are beautiful; they are changed from time to time, from one pot to another, and are still beautiful and in good proportion to the pot they bloom in; and we maintain, that from the time they first bloom, however small they may be, they are desirable. Let the same small plants be placed in a peck pot, and there they must remain useless fixtures, until they have arrived at the size that is proportionable, and then, if we follow up the subject, what is to become of them when in perfection? why they must die or be shifted into larger, so that the advocates of the plan beat themselves by aiming at too much. There was nothing new in making very great changes in the sizes of pots: the practice with some things is very old indeed. Carnations and Piccotees have ever been grown with but one shift; the layers are stored in large sixty sized, or small forty-eight sized pots, and in the spring shifted at once in pots of number 12 size. Again, climbing-plants, with fancy trellises, have been long grown upon that principle; the trellis being a fixture to the large pots, the plant in its smallest state has been by many put at once into the pot it was to be perfected in. Many other subjects will grow well with a single shift; but if gentlemen's houses are to be filled with peck pots, and plants, begun as rooted cuttings, to stick there till they are large enough to match them, away goes all the diversity of collections, and nine-tenths must be thrown away to make room for the remainder. All that need be said upon the subject is, that the system is very well as a plaything, to be used by those who like it, but that it is perfectly unnecessary, and as a general system both inconvenient and incompatible with the beauty of a house, and the gratification of the owners. Nobody can dispute the fact that a plant likes room, else how is it that they grow so much better in the open ground than in pots? If plants like room, it is a good reason for giving them plenty, but this plenty must be regulated by the means at hand, and the purposes to answer. If, as in most gentlemen's establishments, there is required a constant succession of blooming objects, it is better to have all these of available sizes, than to shut ourselves out by attempting novelties which preclude the use of those we have; and while plants may be for years handsome and proportionate, available as ornaments and easily removed, it does seem a crazy proceeding to put them into half-a-hundred weight of soil, which makes them fixtures, and ugly ones, until they have grown up to the pot. But to grow a plant as well with half-a-dozen shifts, as we can with one, we have to be careful on sundry points: first, they must never suffer an hour for want of water; secondly, they must be shifted as soon as the roots reach the sides of the pot; thirdly, there must be great care taken that the drainage is free; fourthly, the sides of the pot must not receive the heat of the sun. With these conditions we have seen, and shall see again, the plant of many shifts equal in beauty in all its stages to the plant of the peck pot.

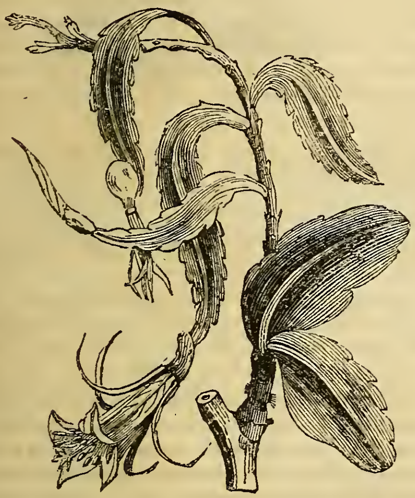
THE THEORY OF HEAT AND COLD IN PLANT HOUSES.

A GOOD deal may be written on this subject, for there is much to be learned, but I shall confine myself to one single point, little attended to, little thought of, and by many never considered at all; I mean the necessity of lowering the temperature at night. In general, and I have visited many private establishments, the temperature of the green-house is raised, instead of lowered. Fires are lighted in the evening, and when all is dark the temperature is raised, and the effect perfectly unnatural; if it were possible, the temperature of a green-house in the dark should be five or ten degrees colder than in the daylight; and it is in the nights only that plants get drawn and of bad colour. What is the condition of a plant out of doors? It has all the heat during the day, and all that is above ground receives the cold during the night, while its roots in the earth suffer no diminution, for below the surface the ground is as warm as it was in the day-time. Let a geranium be turned out in May, and let another be kept in the house, and that out of doors beats one under glass in every respect—it is less drawn and is a better colour. It has the benefit of a cooler atmosphere all through the night, while the one under glass is shut up out of the wind, and in the warmth, without even the benefit of the air which it receives during the day; and it may be taken as a general rule that if the green-house could be kept down to 35° all night, or indeed to anything short of freezing, it would be always better for the plants.

DISOCACTUS BIFORMIS, OF LINDLEY.

TWO-SHAPED TORCH THISTLE.

This plant formed part of a collection transmitted by G. U. Skinner, Esq., from Honduras, in 1839, to Sir C. Lemon, Bart. M.P. of Carclew. It forms a graceful plant, from two to three feet high, with round quill-like stems, and flattened fleshy branches, which bear towards their extremity solitary deep pink flowers, of the form represented in the annexed cut; these are succeeded by crimson egg-shaped berries or fruit. It requires treatment similar to the well-known Cactus, or Epiphillum, or as it is now to be called, Phillocactus speciosus. The following account is written by Mr. Booth, the gardener at Carclew: "The flowers are of short duration, but open in succession for a considerable time. The plant delights in a rich loamy soil, mixed with charcoal, and is easily multiplied by means of its leaves or bits of its stem. Like most others of its tribe it requires a warm temperature and plenty of light. In the beginning of September, the plant produces an abundance of beautiful little berries. They are shaped like a very small egg, the largest of them scarcely averaging the size of the common sloe, with the dried remains of the flowers attached to the point of each. The skin is smooth and glossy, semi-transparent, and of a deep purplish crimson, with several minute scales, but without any of those small spines which render the fruit of the prickly pear, and other Cacti, so troublesome. The inside consists of a soft mucilaginous pulp, somewhat paler than the skin, having numerous small dark-brown seeds irregularly imbedded in it, and possesses a sweetish, with something of a sub-acid flavour, by no means unpleasant to the taste. Where novelty is an object it would almost be worth while to cultivate this plant for the sake of its fruit; not that I think it will ever become of sufficient importance to rank as an auxiliary to the dessert, but for the purpose of ornamenting the varied productions of the cook and confectioner I believe it will be found extremely useful, and on this account I venture to recommend it to the notice of such as are interested in these matters. The plant is of the easiest culture, and sets its fruit more readily than any other species that I know. On the one at this place I counted eight dozen ripe fruit, although the plant does not much exceed two feet in height. It had a very pretty appearance, and was quite as ornamental in its fruiting state, as it was when in blossom in the spring."



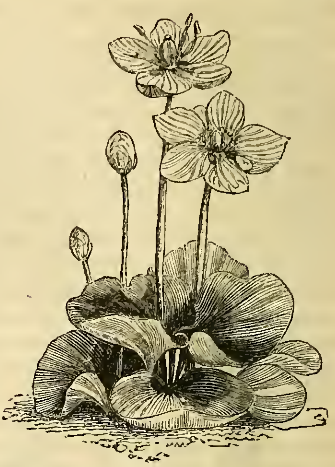
THE RAISING OF PLANTS FROM SEED.

Nothing so completely kills the germ in a seed as alternations of wet and dry. It matters very little about the cause why these alternations kill them, but having proved it many times, I hesitate not to say such is the effect. Next to this in point of mischief, is cold and wet; and next to that, heat and dry. From repeated trials, I have proved that heat and moisture will cause seed of all kinds to germinate; but there are many that will grow with so little of either, as to require no care or attention. Among our popular plants, Eriostemon buxifolium, which gives a hard seed, and Andromeda floribunda, the seed of which is very small, are as difficult as any; but if there is a fair degree of moisture kept up, and the heat of an ordinary stove preserved, these seeds will germinate freely. The easiest mode of securing this, is to sow in a seed-pan of peat and loam, with a little sand; water with a very small-rosed syringe, throwing the wet like a moist dew, and as lightly, and covering with moss. In a fortnight, or rather more in some cases, and in others a month, the seed will germinate, when they must be shaded with white thin cloth or paper over a hand-glass or bell-glass, which should be placed on to protect it from draughts and alternations of atmosphere. As soon as they are large enough to conveniently get hold of, plant them out in similar pans, or large pots, an inch apart, water them gently from time to time, and cover again with hand-glass, and have it lightly shaded until the roots get established. In this pan they may grow until they have not room enough, giving them warmth no longer than establishes the roots, and then moving them into the green-house; keeping them, however, protected with the glass and shade, as before. When they require repotting, it is still better to get other pans or large pots, and increase the distance apart, for the larger the body of mould they are in, the better. In the case of Americans and hardy things, they may be bedded out in a place composed of peat and loam, such as Rhododendrons and Azalias are grown in, the first June after they are large enough, and there shaded from the heat of the sun daily; while the Eriostemon, or any other green-house plants, may be potted into those of forty-eight to the cast. The after management, however, is not so much the object of this paper, as the germination of the seed. We have known sowing after sowing to fail, in the hands of some of our best cultivators, but on trying the moss and heat, they have succeeded completely. When once the seeds have fairly begun to grow, it does not matter how soon the heat is reduced a little; for both the plants we have mentioned, and all Botany Bay plants, Ericas, Epacris, and Americans, are impatient of warmth; and an hour or two neglected, would perhaps kill them all; still moisture prevents generally any rapid dissolution. It must also be remembered that an hour or two's hot sun would clear off and dry up the whole batch, in its young state. On this account, as soon after the pricking out as they are fairly established, and begin to grow, you may begin to lessen the heat; first by putting them in the coolest part of the stove, and next by removing them to the warmest part of the green-house, after which to the coolest.

PARNASSIA ASAREFOLIA.

ASARUM-LEAVED PARNASSIA.

THIS plant is often quoted as one of the numerous botanical curiosities which engage the attention of naturalists. The flower is one of those unconspicuous colours, if colour it can be called, which is a struggle between a white and a green, and perhaps the green has the best of it; for independently of the greenish cast over the whole flower, there are distinct green stripes all over it. The leaves are heart-shaped, and without stalks, folding, as it were, round the base of the flower-stem. In some of the species there is a leaf rises with the flower-stem, and grows midway, as if it had been drawn up the stalk from the base. With the botanical beauties of plants we have little to do, or we might quote a long description of one of the species from the Ladies' Botany, where the plant is treated of at some length on account of the singularity of its glands. Maund thinks this plant is well adapted for cultivation in the Wardian cases; and Dr. Lindley, mentioning one of these varieties, says it may be grown in wet bog-moss, covered with a bell-glass, and exposed to the light. It is a neat compact looking subject, but not by any means so much a garden beauty as a curiosity. It should be planted in the shade. It requires a peat bed, and it propagates by dividing the roots.



HINTS FOR THE IMPROVEMENT OF FLORISTS' FLOWERS.

THE HYACINTH.

THE raising of seedling Hyacinths chiefly occupies the Dutch, and all they seem to care about is novelty and size of flowers; they neither prize the best nor save the best, so that for years we have had no improvement in the general character of the flower. I mention this in confirmation of the general assertion that floriculture was impeded by the wholesale manner of saving seeds from general collections. Now we are so close upon the blooming season of Hyacinths, that I would recommend a visit to the nearest nursery at which the flower is grown, with this work (page 88) in your hand, containing the proper form for a Hyacinth; not that you will find any there so perfect, or that I would hold out hopes of ever producing one so perfect; but then pick out the nearest you can find to the standard you have in the book. Find the nearest white, pink, red, light blue, dark blue, and yellow or straw-colour. It is necessary you should go where there is a pretty good variety, and pay some attention to the form of the single pip, rather than the form of the truss; there being many very closely blooming varieties which will not bear nice examination, the individual flowers being so excessively ragged as to hardly bear separating. Having selected your sorts, make your memorandum for purchase next year; or if there are the proper sorts to be had in pots, not yet opened, they may be purchased at once, and thus treated. They cannot be planted out in the ground, for the frost would injure the flower; but they may be carefully shifted into pots a size larger, and well watered, keeping them in the green-house or in a cool room, where the windows can be opened for the sake of air, whenever the weather will permit, and for the purpose of preventing them from being drawn up. It must be remembered, however, that all this is only for the chance of a few seeds, for the only way to depend on Hyacinths for seed, in a general way, is to plant them in November, out of doors, and let them have all the weather, being particular that there are no other near them, nor in the same garden. I have seen a bed of some hundreds growing in the open air, and nearly four out of five seeding all through the bed; but as it was a general collection of all the sorts on sale, the seeds produced nothing so good as the best of the originals, so that a large quantity of seedlings, to the number of many hundreds, were, (except in two or three distinct colours there was novelty,) only fit for common border flowers, and not half so good as the ordinary Dutch mixtures. If by giving plenty of air and sun, and proper moisture, they happen to seed this spring, so much the better; they will not ripen, perhaps, till June, and whether they do or do not this year, you will at least be better acquainted with the flowers and their properties by the next, when they may be bought and planted at the proper time. Presuming, however, that you have the seed saved, proceed in every way precisely the same as I have recommended for tulips; sow at the same time and in the same manner, as well as in the same compost; take up the bulbs by the same rule, replant them in all respects alike, and when they first throw up bloom-buds, which will be very weakly, pick off all but the top bud, for the root must not be weakened by flowers until it has acquired almost the full size of those you buy at the seed shops; when, however, you see a handsome spike thrown up, with the buds pretty numerous and close, it will be well to let that spike bloom, and according to its quality you must decide upon whether you increase it all you can, and give it a name, or use it, or give it away as a border flower. By the time the Hyacinth blooms strong, there may be several offsets; these I presume to have been saved, as in the case of tulips, so that they may share the fate of the parent bulb, whether it be for good or evil. The Hyacinth seldom blooms strongly two years running; those we buy at the shops have been nursed by the Dutch growers from offsets in the way I mention; they are not allowed to bloom more than one of their buds until they have acquired a marketable size, and then they are taken for sale. So every offset of the flowers or bloom in London might be nursed, if the idle florists of this metropolis paid proper attention, but we bloom them in water, force them in heat, and do every thing to weaken them, and at once conclude that they are done for. However, I am not upon the general culture of the Hyacinth now; I should say, that in the course of blooming seedlings raised from seeds produced by the best flowers only, and far away from any common ones, some will be found as good as the present, but of a new colour; others will be occasionally found better in form than the best of those they are saved from, and in either case it would be right to save them with all their offsets, to be named and grown for their improved character or novelty. The practice of crossing flowers artificially may be followed, and though I have not mentioned it with this flower, it must always be noticed that seed can only be saved from flowers which have all the organs of generation. If any subject, like the stock or the wallflower, which possess neither seed-vessel nor stamens in their double state, were grown by thousands, and a single stock planted among them, it would not yield a single seed more likely to produce a double one than if it had been grown a mile from the mass by which it was surrounded; but where flowers are semi-double, and have the organs of generation, they may take their chances, if none but good ones are together. Those, however, who desire to impregnate one with another particular kind, must use the means according to the subject. When you can get at the pollen no other way, you must use a camel's hair pencil, which you thrust in among the powder, and the pencil will come out with the pollen attached to it; this then applied to the seed-vessel, or rather the pistil of the other flower, will, if it be in proper condition, leave some of the powder on it; nevertheless I repeat, that if there be none but good sorts placed together, the crosses will be more varied, and yield quite as good varieties. The chief art in raising the Hyacinth consists in removing the buds to prevent blooming, excepting one pip near the top of the spike, which the Dutch people fancy is necessary to draw the sap up the stem, to prevent that hasty decay which will sometimes take place when there is nothing to require it, and which often ends in rot.

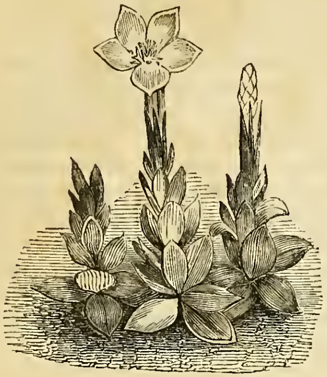
THE AURICULA.

The Auricula shall be the next flower on which I shall endeavour to offer a few hints, for that flower has advanced as little as any for the last thirty years, at any rate until the last two or three, during which some rather pretty varieties have been added to our previous stock. I, like many others, have been almost tired of raising seedlings, because I have not gone the right way to work. Indeed, the saving of Auricula seed has been made such a matter of difficulty, that one has been glad to let a whole collection take their chance, and then any pods that could be found were treasured up like gold, sown in due season, patiently tended a year or two, and as they bloomed a few at a time, not a flower could be found worth saving of a hundred that opened. If out of a large batch a few were saved to be tried another year, they disappointed, and season after season has this been our fate years ago, until the plain fact came across us, that flowers, far removed from their natural state, have a strong disposition to go back to their original. The Auricula is what many florists call a miffy plant; that is, it is very easily mismanaged, and often goes off without the owner being able to assign a cause. That it requires attention and watchfulness is quite true, but it is not a difficult plant to grow, if the cultivator will but leave nostrums alone, and grow them in pure loam and vegetable mould; or, if that cannot be had, loam and well-decomposed cow-dung. I have known old growers to go long distances to get the mould out of a hollow willow-tree, which has been considered, I know not why, to make the best vegetable mould. Probably, if vegetable matter be thoroughly decomposed, there will be very little difference in the essential qualities. I have grown things in great perfection with mould taken from a heap on which waste vegetables of all kinds were thrown; even the weeds, the sweepings of grass from the lawn, the leaves from high trees, all heaped together, and rotted together. The only particular care required in keeping the waste of vegetables to rot is to prevent anything but vegetable matter to be thrown on it. I should prefer above all things the mould from rotted turfs, where the loam was inclined to be sandy, but if it were not sufficiently so I would add silver sand. I have been more particular about the soil than I otherwise should have been, because I have seen hundreds of seedlings in very improper soil, and known them to dwindle and damp off until the whole were gone, and that after growing—or rather existing—nearly two years. The way, then, to save the seed of Auricula is to take the best of the show flowers, the most flat, the most round, the most rich in colour, and the most handsome trussers. But unfortunately nearly every Auricula has some bad fault. The most scarce quality of all, perhaps, is flatness; the best in this respect is the worst in many others. For instance, Cockup's Eclipse is the most decided of all in the remarkable flatness of its petal, and it is a pretty colour; but it has a wofully large tube, and the interior of it is dirty white instead of bright yellow. Hedge's Britannia is another remarkably flat variety, but it has its faults, and plenty of them: Gains's Privateer is a splendid colour, but often a crumply flower, and an awkward truss: Page's Champion, the great favourite of the day, is the brightest looking variety grown, the colours are decided and well defined, but in other respects it is very faulty; it is much disposed to crack, difficult to open flat, paste very coarse, nevertheless it is upon the whole, whether rightly or wrongly, the favourite: Booth's Freedom is a rich looking flower, not only opening flat, but more than flat, for the face of the flower is often rounding the edges, literally turning back. Not one of these flowers are at all perfect; but to secure good seed, with the chance of approaching nearer perfection than we have yet got, I recommend the following varieties, or as many of them as can be got conveniently, and to be grown together in the same frame:—Dickson's Matilda, Page's Champion, Lee's Colonel Taylor, Booth's Freedom, Pollett's Highland Boy, Stretch's Emperor Alexander, Smith's Waterloo, Hudson's Apollo, Dickson's Earl of Errol, Dickson's Duke of Wellington, Dickson's Prince Albert, Lightbody's Lord Lynedoch, Fletcher's Ne plus ultra, Waterhouse's Conqueror of Europe, Dickson's Unique, Oliver's Lovely Anne, Kenyon's Ringleader, Syke's Complete, Hedge's Britannia, Gains's Privateer, Macklean's Unique, Fletcher's Mary Anne, Dickson's Duke of Sussex, Taylor's Glory, Taylor's Incomparable, Popplewell's Conqueror, Thorpe's Magpye, Redman's Metropolitan, Netherwood's Othello, Dickson's Apollo, and Bury's Lord Primate. There must be no other kinds in the same garden or near it. Here they must not be treated as if they were going to be shown; they may have the wind, and the air, and an occasional mild shower, be covered from frost, but treated roughly in mild weather; the flowers, however fine they may be, will be spoiled of course by the admission of rain to them and of wind, but they will seed the more freely, and that is all you require. Take especial care that they have enough water to refresh them as the flower advances, and as the pods swell; let them have all the sun, and, above all things, see that the drainage is good, and that water will run through the compost freely. Here let the pods remain on the stem till they are turning a little yellow, when they may be picked off singly, and put in paper bags. In the spring, say the end of February, or the beginning of March, put such compost as I have described, viz. rotted turfs alone, or loam and vegetable mould in equal quantities, or, if this cannot be had, loam and cow-dung mould, in shallow pans or boxes, well drained, with crocks at the bottom, and lay the surface very even; then sow the seeds very thinly all over the surface, and with a fine sieve sift very lightly just enough of the fine soil to cover the seeds; put them in a garden frame to be kept from the weather. Let the seeds be occasionally watered, (in fact they must never be thoroughly dry after once being sown,) to keep them moist, but not wet; one of the patent syringes will throw water as fine as dew on anything, and if not so watered the seeds will be washed bare, or be disturbed, and this would be injurious. If you have no syringe, and cannot get one, take a common clothes-brush, dip it in the water, turn the hairs upwards, and by drawing your hand along them towards you, you will throw off a very fine dew that will answer all the purposes of the syringe, though not quite so quickly. I do not mean that when you do water you are to be too sparing, for you must let the water go through the soil, or the dry underneath would absorb the wet from the top, and it would form a sort of crust; whereas, if the soil is wet all through, the damp underneath will always rise and keep the seed moist. There is nothing I know of so thoroughly mischievous as frequently slight waterings, instead of few effectual ones, and this applies as much to out-of-door crops as to plants in pots. When the seeds come up, and the plants are large enough to handle carefully, prick them out into pots of any size, but let the plants be a good inch apart; the compost to be the same, the draining good, and the watering to be observed; the hot sun must be kept off by mats, but they can do no where better than in a frame, where the sun, air, and moisture can be regulated. In this way they may grow until the plants touch each other, or nearly so, and then they may be potted into separate pots; but one season I filled a common garden-frame with proper compost (where the place was well drained) to within four inches of the glass, and as soon as the seedlings had got six good leaves I planted them three inches apart all over the frame; they grew fast, and bloomed sooner than those in pots, but there was not a solitary plant worth keeping; some were selfs of no account, others had a thin paste, and all the rest of these flowers were green-edged without ground colour, or with so little as to be worthless, and none were half so good as some of the flowers they were saved from. However, this arose from the fact of their being saved where all the alpines and selfs were grown, bad as well as good. Still if I had a frame to spare, in a situation where it need not be disturbed, I should plant them fairly out in the proper compost, and take no trouble with pots until I saw which varieties were worth it, and throw every one out that did not exhibit some property in perfection. It might not be upon the whole better, but it would be different, and something would be allowed in the way of variety if the properties of some favourite were reversed. For instance, suppose instead of getting the flatness of the Eclipse you had the same colour not flat, but perfectly round, which Eclipse is not; suppose you get old colour with new character, or new colour with old character, it matters very little what change takes place if it be not for the worse, but so much the better if it be so many improvements, and the sooner all that are not so good as we already possess are thrown away the better. I have not seen Mr. Dickson's new flowers in perfection, but I have no doubt they deserve the place assigned to them among show varieties; and there is this much to be said in behalf of any new variety that can stand its ground at all with old ones—there are hundreds of old ones in cultivation, and few, (there can be but very few,) of the new ones; and I have seen twenty of a favourite variety kept on purpose to show from, and perhaps not one of the twenty so good as it ought to be; so that to hold any kind of standing among old flowers a new one must be both tolerably good and very constant, a quality much underrated in all flowers, but of the very highest importance. If a few amateurs would commence Auricula growing in good earnest, we should soon have great improvement; and I know of no flower more likely to reward the enterprizing florist, because there is so much room for improvement. F. H. S.

GENTIANA VERNA.

WHITE SPRING GENTIAN.

The genus Gentiana is remarkable for the dazzling beauty of some of the blue varieties, and the great beauty of all. The plant itself is handsome and dwarf, and most of the flowers are long and bell-shaped; not so Gentiana verna, which is more tubular, but with a bold open mouth, which parts into five rather pointed divisions, like so many separate petals. Gentiana verna has a blue variety and a white one, which might have suggested an additional name. The first place at which the white variety was heard of was the Handsworth Nursery, near Birmingham; but as a variety it is a valuable acquisition to a tribe of plants already very interesting. Some of this genus are adapted for the edgings of broad walks in large concerns, for the edging must be allowed to grow half as wide as an ordinary grass verge, on account of its large features as compared with



box; and again, it must remain undisturbed some time before it flowers freely. The white variety of Gentiana verna is by no means plentiful, but it deserves a place in every garden. The majority of the species grow well and look well, and flower in April and May. This renders them, for the most part, a good subject for an edging to a gravel walk; they grow well in the shade, and if a bed be made for them in collections, the compost should be peaty.

LIQUID FERTILIZERS.

These, like a thousand quack medicines, are offered in all directions, and the florist or amateur who buys and tries is totally in the dark as to what he is doing; but the most likely of all that we have noticed is that taken from the Gardener's Gazette last month, and since repeated by the correspondents of the paper, who are said to have tried it. We have, however, inquired of chemists as to the probability of the solution there recommended doing harm and the possibility of its doing good, and with one consent it has been allowed that ammonia, if not administered in excess, has every capacity to do good to vegetation; and it is as freely admitted that, in the proportion recommended, that is to say, half an ounce of sulphate of ammonia in a gallon of water, applied once in six waterings, cannot do harm, while it must be conceded that a more definitive unerring mode of application cannot be given. We have been so opposed to nostrums of any kind, that the bold manner in which this was first recommended, without any kind of qualification, rather startled us, and led us into serious inquiries wherever we had a chance of learning anything, and, although we have given our reasons for the questions we have put, we have been thought unnecessarily inquisitive. But here is the point—hundreds have bought fertilizing liquors in bottles with directions for use; some of them leaving a good deal to the imagination of the cultivator; for instance, "put a little in the watering-pot when you water your plants," is a very indefinite kind of direction. "Water the plants occasionally with some of the mixture in twenty times its quantity of water," is another awkward lesson. And then, again, the liquids in bottle come to a price which a large grower would soon find a considerable item in his expenses. In the solution recommended there is neither cost nor uncertainty. But to go to the result of our inquiries, many of the solutions sold in bottles have been reported by different people to have different results. Some complain that it has killed their plants; others, that they see no difference in those to which they used it and others which went without it. But this says not half so much against the fertilizers as it does against the indefinite instructions which accompany them. For all we can see, the very thing complained of on the one hand for doing nothing, and on the other for killing the plants, might be the very solution we are recommending — second-hand, it is true, but nevertheless recommending—as a most useful and certain application to almost every, if not quite every description of plant. The evidence we have of its efficacy at present is—

1st. Applied to geraniums as soon as they showed the bloom trusses, instead of shifting them into larger pots and fresh stuff, they come much larger and finer, and the foliage a better colour, than those which had not the application and were not shifted, as well as much better than those which were shifted instead of having the application.

2d. Applied to fuchsias coming into flower, with their small pots full of matted roots, and beginning to turn pale for want of shifting, they improved in colour and flowered and grew freely, while those shifted were inferior, and those remaining in their own pots were very bad indeed.

3d. Applied to fuchsias (this spring) which should have been shifted from their crowded pots to grow, they have set off in rapid growth and fine green colour, surpassing those shifted, while those not shifted have almost remained in a stunted state.

4th. Applied to newly-potted green-house-plant rooted cuttings, they are growing rapidly, while those which are watered in the ordinary way are by no means going on so well.

5th. Applied to alternate rows of peas in the summer of last year, they stood well through all the dry season, and bore heavy crops, while those sown at the same time failed, or were so bad as to afford but little benefit.

6th. Applied to dahlias on poor ground, they grew twice the size of their fellow plants in the same soil, watered at the same times, but not with ammonia water.

7th. Applied every third day's watering, it made the plants turn yellow, some of the leaves drop, and remain sickly for weeks, after which they recovered and grew remarkably fast and well.

From these gathered facts we have a right to believe that this, as well as many other applications, depends for its efficacy on the proper quantity being administered, and as there can be nothing so certain as the uniform strength of the liquid to begin with, and the application of it according to the quantity of water administered for nourishment, there can hardly be a safer mode. In winter, plants want but little moisture, perhaps hardly once a week, but if once a week, every sixth week should have the ammonia water ; and if twice a week, its turn would come every third week. But there can be no mistake, when it is understood that they are to be watered five times with plain water to once with the solution, and that solution is to contain half an ounce of sulphate of ammonia to one gallon of water.

BIGNONIA RADICANS.

ASH-LEAVED TRUMPET FLOWER.

We hardly know a climbing plant that deserves more general attention than the Bignonia radicans. It requires but little trouble; it soon covers a large space ; it clings of itself like ivy, and only wants to be kept within the prescribed bounds. The magnificent Ipomea Horsefallii, with its rich scarlet-crimson trumpet-mouth flowers, the admiration of our stove conservatories, presents not an object more brilliant than does this easily-grown plant, every shoot of which at the proper season affords its bunch of orange-scarlet blooms, literally covering the whole space sometimes with its fiery blossoms. A south wall should be its station, and its leading shoots should be supported while the plant is taking up its position ; and, as it looks best when allowed to ramble or grow outwards, as well as the ivy, when it has reached the top, it is as well to continue fastening the leading shoots, that its own weight may not tear out its natural holdfasts, that will be insinuated into every crevice. The simplest mode of propagating the plant is by layers, which may be pegged down any time between September and March, and not be taken off for twelve months. With regard to the pruning, all you have to do is to cut back the strong shoots and cut away weak ones altogether. The flowers are borne on the young shoots of the same season, and if the plant is in health every one of the shoots will perfect its pannicle of flowers. There is hardly a more beautiful object than a well-trained plant of this Bignonia from the time when it is coming into bloom until it has gone off its flowering, for whether partially or wholly in blossom, the flowers are so striking that a few make a noble show.

GARDENIA STANLEYANA.

This is a new stove shrub, of considerable beauty; it grows upwards with an erect stem, and near the top a series of branches spread out, nearly at right angles with it, or perhaps rather drooping ; these branches are furnished with opposite oval, shining leaves, and from the axils of these leaves the flowers are produced, in considerable numbers. The flowers are several inches long, and stand erect from the horizontal-growing branches ; they consist of a long, narrow, rich chocolate-coloured tube, and near the extremity widen out like a pouch or funnel; the limb, or the spreading portion at the extremity, is white, prettily mottled and marked with purple ; the margin, or edge of the tube, being of a delicate flesh colour. It is now (March) in bloom in the stove of the Royal Botanic Garden, of Kew; and Sir W. Hooker states, that when in its perfection, he knows of no plant more beautiful. It was brought from Sierra Leone, by Mr. Whitfield, who has been engaged in collecting objects of natural history for the Right Honourable the Earl of Derby; and who has succeeded in adding several new, and exceedingly handsome plants, to the collections of this country.

WASTE-LAND PLANTING.

BY JAMES GRIGOR, NURSERYMAN, NORWICH.

England is generally considered to be a well-wooded country, reposing all over under a broad umbrageous canopy of green ; her fields distinctly marked out and intersected on all hands by hedgerow trees, and her heights well clothed with every species of timber. Such is the picture usually presented of England, and such indeed is her character in a great measure. Her leafy nooks are everywhere: her parks and lawns, the richest and greenest on the earth, are thickly set; and about these are her noblest ornaments, her old and wide-spreading trees. Thus it is that, in almost every quarter, her out-of-door appearance is strictly sylvan. Even on her mountains, her voice is often heard among the thick boughs. Yet, at the same time, there are throughout England many moors and wastes, in every respect suited for planting, which the spirit for improvement has not yet overtaken. Passing a few of the richer counties around London, the traveller soon espies tracts of unimproved lands, in many cases lying as low as those parts which are cultivated. Around Newmarket and Thetford, in Suffolk, and in the same quarter in Norfolk, there are immense sandy heaths in a state of nature. Along the coast, between Yarmouth and Lynn, in the latter county, is a long stretch of land adapted for nothing else than the most hardy timber trees. In Cambridgeshire, though low and fenny, vast and cheerless solitudes are yet unenlivened with verdure; and over these there is consequently scarcely any show of animated nature. Lincolnshire, though possessing one of the richest tracts of land in the kingdom, has its wide heathy, unimproved districts. Leicester, Nottingham, Northampton and Warwick, have their waste places; and in proceeding to Derby, and the north generally, it is found that a great proportion of the land is not yet subjected to the dominion of man. The mountains of North and South Wales, presenting the most appropriate and beautiful sites for fine woods, seem as if they were cast out from the pale of living men; and if a green speck be discerned, how little has it accomplished in the way of persuading others to extend their labours!

The great object of planters has been profit, direct profit on so many square feet of timber; and on account of the distance from roads, or from a shipping port, or from an otherwise convenient market, the trees have not, it is said, brought a remunerative price to the grower. This, no doubt, has been the case in many instances; but in others, it is very manifest that the trees should have been cut down and used where they grew, or in the immediate neighbourhood. A Frenchman, a German, or even a Scotchman, in traversing England, is very much struck with the appearance of huge mounds and embankments, raised to divide the fields between man and man, which are known by the name of fences, as it is on these embankments that hedges are planted. On such sites, a hedge will require at least twelve years before it comes to maturity, if indeed it will ever become perfect in such places; whilst if planted on the plain surface, it will present an impenetrable barrier in five or six years. It seems astonishing, then, that the former mode should be resorted to; but on inquiry, it is found that the secret lies in the scarcity of fir wood to form a protection to newly planted fences, when made on the plain surface of the ground; the plan, but for the scarcity of wood alluded to, would be universally followed throughout England. Here, therefore, is an important outlet, at least for all the thinnings of plantations in the neighbourhood of corn and pasture districts; and as the employment of fence-wood for young hedges, planted on the plain surface of the soil, would not only be the means of securing to us fences much more effectual, and in a much shorter period, but also enable us to save an almost incredible space of land, it may not be out of place to pause a moment, in order to consider the latter fact a little more fully. Whatever is got from the space occupied by the sites on which fences are at present erected, must be good land, ready for tillage; and the importance of the inquiry is on this account greatly enhanced. In order to get at an approximation to the truth, let us select a district in England on which to ground our calculations; and lest our data should be too favourable, let us fix upon Norfolk, an open county, noted for its *large* enclosures, and consequently, compared with other counties, distinguished by the small space occupied with fences. According to Arthur Young, this county contains 1,171,200 acres of land, of which 130,000 are unimproved; which, with the space occupied with gentlemen's seats, &c., will probably reduce the arable and pasture lands to 1,000,000 acres, or a space of 1562½ square miles. Taking an average of those square miles, it is found that the fences alone occupy at least five per cent. of the space, or five acres in every hundred, or thirty-two acres in every square mile. In Devonshire, some of the fences are a perch in width, and the per-centage is as high as eight and a half, or one acre in every twelve; but adhering to the most moderate calculation, at five per cent., which is at least one-half more than what is necessary, the space gained in Norfolk alone would be about 25,000 acres of the richest and best land in the county, and all this by the simple process of planting pine and fir-wood; so that the thinnings might be applied as posts and rails, to protect properly-formed hedges! Applying the figures to all England, a space equal to a new county, every inch of which would bear corn, is at once thrown open to our increasing population.

Another most important market for timber, and especially for that sort which grows on the worst description of land, is to be found in our railways, which are now being formed in almost every county of England. Even the present demand for wood has very much thinned the pine forests of the north; and when it is considered that the sleepers have all to be replaced *ad infinitum*, it becomes a matter of grave import to ascertain where the necessary supply is to come from. Every reflecting man must see that a great part of it at least *must be grown;* grown, too, on those almost measureless tracts of what are foolishly termed waste or barren lands; but which, indeed, are lands ready at all times to overlay themselves with the richest burdens which the earth can bear. It is to be hoped, then, that many will go forth carrying vegetation over those unproductive solitudes, which are yet everywhere so abundant in the north, even if actuated by no higher motive than a good return for capital expended in planting them. If we except North and South Wales, Lancashire, Northumberland, Cumberland, and a few other counties, the unoccupied land in England bears but a trifling proportion to the extent of territory not yet planted in Scotland. To the latter country, therefore, the remarks here made apply with double force. It is, indeed, true that in several instances in that part of the kingdom, the most noble examples have been set in reclaiming unprofitable districts, but there is yet much to be done; and it is all the more imperative that it should be done speedily, on account of the numerous lines of railway projected throughout the north.

Thus there are two inducements to plant which, twenty years since, were never dreamt of. The old pleas for planting remain, independent of these, in all their force. Houses have still to be built, fleets to be equipped, the multifarious arts of peace and war to be prosecuted, shelter to be created in high and exposed situations, and over all the country the landscape to be enriched and variegated as before. Nay further; ever since royalty has put its hand to the good work, new classes of planters have arisen, representing a new interest, and prosecuting their views with a zeal and determination seldom or never equalled. These planters belong chiefly to the juvenile branches of our aristocracy, and are the labourers in the sentimental and historic field. So far, their exertions elicit our praise; but if they would only extend their work beyond the park and pleasure-ground, and embellish the bare moor and mountain land, they would not only experience a higher degree of pleasure, but establish at once a substantial source of income for their lifetime. Never was there a greater fallacy broached, than that of a man's planting altogether for posterity. What has posterity to do with the immediate and incessant demand for hop-poles, which ashes and larches planted this season, will become in the course of five or six years? Or with the alder, which, planted now by still waters, will be ready in time to be used in the shape of basins, plates, kneading-troughs and clogs, by men and women who are at this instant upwards of seventy years of age? Or with the spruce and Scotch fir, which, after ten or fifteen years, may be taken down from the hills and mountains, and applied as fences for cattle, for hedges, in building sheds and outhouses generally, and for many other purposes of the farmer? The whole of the poplar and willow tribes are for the present race; and indeed one of the individuals, the white poplar, is absolutely worthless as a timber tree, if allowed to stand longer than fifty years, the heart-wood decaying after that time. It may be found that posterity has more to do with such things pictorially considered, yet the living have unquestionably their share in the pleasure derived from contemplating trees merely as objects of beauty. Loudon has somewhere said, that if he had been the owner of an old-wooded estate, the first thing he should have done, would have been to have cut down all the old trees and planted young ones, such was the pleasure he derived in watching their growth towards maturity. Without subscribing to such an idea in all its extent, it may be stated, that the development of young trees, wherever planted, affords very great gratification; but when they are made to rise over scenes which have, since the creation, yielded nothing to man, the planter invests himself with a character really honourable. He enriches the earth, he beautifies it. But even supposing that many of the trees planted by the present generation may be inherited by the succeeding race, are men so selfish as to neglect a great and important duty, because, forsooth, the full benefit may not be reaped by themselves? By no means. The spread of life insurance companies, and similar institutions, is sufficient to prove the groundlessness of the idea.

Before proceeding to point out the kind of trees to be planted, &c., let a word or two be added on their interesting associations, and on their uses in embellishing a landscape. This, perhaps, does not appear in all its force under the head of waste-land planting, yet it is unquestionable that some of the grandest traits of our sylvan scenery are formed by trees which have risen on lands inaccessible to, or unfit for, the plough or spade. Besides, a tree often becomes just as beautiful on poor as on rich land; and if the birch, larch, and pine, are to be singled out, the difference would be in favour of those grown on inferior land.

Men now-a-days scarcely need the sanction of antiquity to regard trees in their true light, as objects full of beauty and interest; for every one who looks upon nature, whether seen in her high woods, her hanging drapery by the river's side, her wide-spreading park ornaments, her cultivated specimens in the pleasure-ground, or the rude forms as seen in the illimitable depth of forests, accords to them the important character which they everywhere claim. Yet no one, for instance, likes the oak less because it rose on the plains of Mamre; or that a celebrated specimen, a holm oak, (Quercus ilex,) which grew in the Vatican at Rome, was accounted, according to Pliny, a sacred tree 1500 years before the Christian era. Nay, every one loves them the more, since they were "in old times the very temples of the gods;" and this feeling is nohow more strengthened, than by a reference to their identification and appropriation in the classical lands of the ancients. Take Greece, for instance. There was the oak, the beech, the larch, the pine and cedar, filling her mountain heights with masses of verdure; the poplar, lime and ash-tree, studding her valleys and plains; her deeply-indented coasts fringed at this day with the laburnum, willow and laurel; and the platanus, so famous in Lycia, scattered all over the country, but employed especially in forming groves and shady walks, near to the most celebrated buildings in Athens. Hence all these trees, and many others known to the Greeks, are so far associated with them; and consequently become, to many, objects of a deeper interest. As mere forms of beauty, apart from such associations, trees are by far the most important adjuncts to the face of nature. Our parks and pleasure-grounds abundantly attest this fact. What a weight of grandeur does England owe to her trees alone! Enter the grounds of Sion, Whitton, Claremont, Cashiobury, White Knights, High Clere, Chiswick, Pain's Hill, and Purser's Cross, and the mind is filled with astonishment at the majestic structures around us. A strong roofing of branches, high overhead, from exotics as well as those which are indigenous, reminds one of those temples at which cunning workmen have wrought long and patiently; but again, their height, spread, enormous tortuous ramification, and the thought is forbidden! Take trees under a different aspect: let us consider them as clothing.

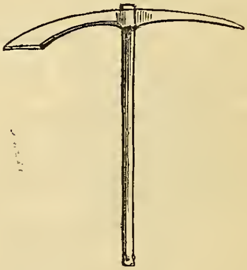
Nature, in her more varied and rugged appearances, such as are seen throughout the highlands and straths of Scotland, growing, in some instances, on the very summits of the loftiest mountains, planting themselves amidst masses of slate which apparently bid defiance to the inroads of the cultivator, obtaining for themselves the surest footing on the face of steep precipices, and anon, studded over immense natural amphitheatres, looking down upon the sea. Craig-y-barns, Bruan Water, Loch Hoishnie, the Findhorn, and Sutherlandshire, are the examples. Again, for illustrations of deep woodland solemnity, Bræmar, Abernethy, Duthel, Rothiemurchus, and other forest tracts on the Spey may be mentioned; but these, though vast, are as nothing compared to some forests in foreign countries.

Taking it for granted, then, that these preliminary remarks are sufficient to draw attention to the importance of trees in every respect, it now becomes necessary to point out the precautions to be used before planting waste land; the kind of trees to be planted, the mode of planting them, and their after-management. The world is full of uncertainty on most of these heads, and as the writer has had ample experience in these matters for the last twenty years, he trusts that the practical results here detailed will at least merit an attentive and patient hearing.

It is of very little use planting trees where water stagnates: even the alder, which is the most aquatic British tree that we have, dislikes it; so that, in such parts as are saturated with moisture, large open drains should be made, and in cases where the subsoil is not sufficiently porous to allow the water to escape, smaller drains in connexion with the large one should be formed, so as to draw off the surface water. In some few instances, this is found to be ineffectual: in those cases, all that can be done is to ridge up the soil, so that parts of it at least may stand out of the water sufficiently to afford a footing for willows, alders, poplars, and spruces. In the course of ten years, the roots, penetrating the subsoil, will serve in a certain measure to render it more porous, and the fall and decay of vegetable matter from the branches will, in the course of time, create a surface soil sufficient to grow trees of a less aquatic description. Such parts as assume the character of lochs, ponds, and basins, containing water to the depth of a foot or more, are beyond the province of the planter, and ought for the time to be left untouched. If of small extent, the loss is immaterial: if otherwise, extending to an acre or upwards, the feature becomes ornamental, and forms an agreeable contrast to the usually unvarying character of a forest. It is quite impracticable, as it is unnecessary, to attempt ploughing or trenching large tracts of waste land, as some writers suggest. The plants recommended in a subsequent part of this article require no such preparation; and as they are the only trees which will grow on the lands here treated of, the practice is at once to be discarded as almost worse than useless.

Next, as to fencing. The land-steward looks around him: he sees on all hands an abundance of growing trees, but few or none adapted to his purpose, and begins to fancy that England, though full of trees, has but few to meet her most urgent wants. If larch and Scotch fir poles can be had at all, it is oftentimes from a distance, and, consequently, at a high price; but as a fence must be formed, the outlay is submitted to, and the posts and rails are erected. In some parts of Scotland there is on the mountain lands materials for building stone walls, and where this is the case nothing can be preferred to them. The late celebrated planter, John, Duke of Athol, had the most of his plantations enclosed with this description of fence, and he found it to be more lasting and satisfactory than any other. Throughout England stones cannot be had, so that a fence constructed with posts and rails, or with turf, must be adopted. The former is formed by driving posts into the ground five to six feet asunder, and nailing a rail on the top of them: the posts should be about four feet to four and a half feet high. This will protect the enclosure from cattle; but, in order to exclude sheep, three additional horizontal rails will be required. The other mode of fencing, which is as yet new in England, consists in forming a wall of turf, &c., taken from the surface of the ground on each side of the proposed fence line. The turf, or what may be considered the tougher part of the material, is placed on the outside, whilst the heart or centre is filled up with the less adhesive pieces, and with soil dug out on either side of the wall. Another plan is to have a sunk fence, that is, to raise the wall a few feet only on the plantation side, and on the outer side to cast a ditch, the soil from which to be applied in raising the said wall or bank, the same as in hedge-fencing. In general, the great error of workmen in forming such fences is the narrow foundation they commence upon. Turf, when operated upon by the frost, wind, and rain, and especially where grasses do not rise to bind the mass, is of all things the most liable to fall to pieces; and, where there is not a sufficient width of foundation, it shortly becomes either a useless heap, or in continual need of repair.

Mountain land, and what are usually called waste lands, do not generally require clearing; for heath, if not exceeding five or six inches in height, is an advantage rather than a hindrance to young plants. Its shelter, indeed, even when a foot high, would be most desirable, the objection to it consisting in the difficulty which the roots and branches offer to the workmen when planting, it being found almost impossible to fix the plants sufficiently amidst so many branches. Rank broom and furze must be uprooted; heath, again, where it is tall, should be burned three years previous to the time of planting; for immediately after burning, young trees will not thrive so well as in land which has regained its vegetating power. Another important consideration is, to ascertain to what depth the peat soil prevails on the surface: if beyond three or four inches, the plants will not succeed well; but in all districts where the subsoil is reached with the planting iron, success is certain. In the former case, therefore, it is advisable that a person with a pick or mattock should precede the planter, skimming off the peat with one end, and, where necessary, turning up the subsoil with the other. It not unfrequently happens that there is also some parts of waste land covered with a thick matting of grass, dry and tough, and most hurtful to ligneous vegetation. This must be also skimmed off with the mattock, else the plants will die. The instrument best adapted for this purpose resembles a common pick at one end, and the other is made flat at the extremity, about five inches broad, and almost as sharp as a common garden hoe, thus:



The trees which experience, the necessities of the country, climate, situation, &c., point out as best adapted for the districts under consideration, are unquestionably the larch and the Scotch pine, var. *horizontalis*, or, the horizontal-growing red-wooded pine of Scotland. These trees are so well known, and their properties and uses so universally acknowledged, that it is needless to dwell upon their merits. Suffice to say that the variety of Scotch pine just mentioned ought in every case to be planted in preference to the common, soft-wooded kind, the more so, as it is quite as hardy as the tree usually known as the Scotch fir. Both sorts should be two years old, for when of a greater age, pits are required so as to contain their increased roots. Perhaps an exception may be made in favour of the Scotch pine, and those which are three years old admitted, but beyond this age pits will be required for them. Some object to the introduction of the pine as a profitless tree; but in order to show how groundless this idea is, I shall introduce a statement drawn up by Mr. Grigor, of Invergordon, who lives in the neighbourhood of the plantations he describes. This extract I make from a report for which the Highland Society of Scotland have just awarded their gold medal. "The plantations of Lammington Park," says the writer, "cover 1,050 acres, and that of Lairg 150 acres imperial. They were formed about the year 1774 or 1775, and are consequently about 70 years old. The ground on which they stand forms the first and lowest of those hills which extend at from 180 to 410 feet above the level of the sea. Planting was effected with a sort of foot pick, by making a hole in the ground, which was widened into a slit by the planter pushing the handle of the pick to and from him; and the plants were seldom put into the ground under three years of age. It is evident that this mode is much more tedious and expensive, and less complete, than the use of the hand-iron of the present day, &c. . . . . The following seems a fair estimate of the value of the trees taken from Lammington Park when the plantation was of age :—

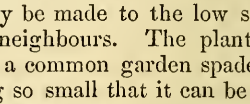
Trees from 40 to 50 years of age, 60 trees per acre, at 1*s.* 6*d.* each	£4	10	0	
Trees from 50 to 60 years, 80 trees per acre, at 2*s.* 6*d.* each	10	0	0	
Trees from 60 to 70 years, 120 trees per acre, at 5*s.* each . .	30	0	0	
Making per acre . .	£44	10	0	
Which, at 500 acres of the best of the wood, gives				£22,250 0 0
Of the inferior parts the value of the produce stands thus :—				
Trees from 40 to 50 years of age, 20 trees per acre, at 9*d.*	£0	15	0	
Trees from 50 to 60 years, 35 trees per acre, at 1*s.* 6*d.* . .	2	12	6	
Trees from 60 to 70 years, 50 trees per acre, at 3*s.*	7	10	0	
Making per acre . .	£10	17	6	
Which, over 400 acres, gives				4,350 0 0
Making a total of				£26,600 0 0

"The whole remaining wood, extending over the 1,200 acres, having lately been exposed to public sale, has realized the sum of 13,630*l.*; the total result standing thus :—

Lammington Park, in thinnings .	£26,600	0	0
Lairg Wood, ditto . .	3,396	5	0
Value of old timber, as above . .	13,630	0	0
	£43,626	5	0"

A noble result, surely, from land which altogether would not have fetched above 10*l.* yearly rent.

Perhaps in no department of planting has such decided improvement been made, as in the art of inserting the young trees; and nothing has contributed so much to simplify the process and lessen the expense of the work, as the adoption of the *planting iron.* It has reduced the art to mere child's work, so that what was formerly considered as an exploit seldom executed, is now a matter of mere routine, undertaken in many parts of the country as regularly as the season advances. The outlay, which is the most important of all considerations, is now, comparatively speaking, a mere fraction. Thousands of acres are planted in Scotland, at an average price of twenty-five to thirty shillings per acre; and in this is included the price of plants, inclosing the ground, road-making, draining and grubbing, in short, everything necessary to form a complete plantation. The chief cause of this extraordinary reduction in price, is to be traced to the use of the instrument alluded to; and as there is no reason why it should not be adopted throughout England, it may be as well to describe minutely the way in which it is worked. From this it is not to be supposed that planting in England can be accomplished at an equally low rate as in Scotland; the price of labour, rates and taxes, rent of land, and other burdens in the latter country, bearing no proportion to that of the former; yet by the process recommended, there is no doubt that, in this instance, a much closer approximation may be made to the low scale of our northern neighbours. The planting-iron is not unlike a common garden spade in miniature, being so small that it can be easily used with one hand, the same as a garden dibble is used in planting cabbages; and in this consists its superiority over every other tool. Its length altogether is about fourteen inches: the plate, or lower part of the instrument, made chiefly of steel, is five inches broad at top, and tapers away on either side so as to terminate in a sharp point: to this plate is welded an iron shaft, surmounted with a wooden handle, similar to that of a dung-fork, though of course much smaller. The annexed figure will perhaps give a better idea of this spade.



The workman having furnished himself with a small bag or wallet, in which the plants are laid, and having fastened it round his waist, commences with the planting-iron in his right hand, and with it makes a notch in the ground, whilst with the left hand he singles out a plant, inserts it in the notch, and having fixed it firmly with his heel, proceeds in like manner all over the piece. It is impossible for the planter to keep in a straight line, especially in an extensive plantation; but this circumstance is rather to be commended than otherwise, for it is found that when in perfect lines, currents of wind get between them; whereas, when in a zig-zag form, the trees are more effectually sheltered from the blast, and have a better appearance when rising above the heath. It is very important that beginners at this work should be narrowly watched, for unprincipled workmen, who have not hitherto practised this mode of planting, in order, it may be, to keep pace with those who have been accustomed to it, neglect to fix the plants properly, and, in some instances, leave spaces altogether unplanted.

The distances at which the larch and Scotch fir should be planted, is about three feet or three feet and a half from plant to plant, or at the rate of 4000 plants to an acre. Some, indeed, when planting the larch solely for the purpose of producing hop-poles, crowd 9000 to 10,000 plants into an acre, which is at from two to two feet and a half apart; but in order to raise trees, part of which are destined to remain till they come to maturity, 4000 plants are found to be quite enough to start with; for before twenty or thirty years elapse, this number will have to be reduced to about four or five hundred trees per acre. It has been the practice hitherto to mix the Scotch pine and larch in plantations, the former acting as a nurse to the latter; but there is good reason to believe that the plants are in every respect better when planted by themselves. The larch, as is well known, is subject to a disease called the *rot*, which consumes the centre of the wood, until the trunk becomes quite hollow, like a pipe or pump; and there is little doubt that this is caused in a great measure by the want of a freer atmosphere, and an intenser light about the trunk when young. The swaddling of them, therefore, with evergreens, should be discontinued, especially as the larch is one of the hardiest trees we have, and requires no such nursing. It is, moreover, much more in accordance with correct ideas of landscape, to have trees planted in masses by themselves, such as nature has them, than in individual contrast with one another, as is frequent in artificial plantations.

The pruning of Coniferæ is a nice operation, and should be undertaken by those only who are well acquainted with the laws of vegetable life. The fact that common labourers are employed to prune or *dress* trees, is a disgrace to England, and a convincing proof that arboriculture is yet in its infancy. The law to be observed with regard to the Coniferæ is, that, in respect to the delicately organized structure, the removal of every vigorous branch is a positive evil; and that so far as the growth of clean timber is concerned, the deficiency of such a branch is another evil. The former is the cutting off of as many life agents; the latter forms a scar or defect in the timber when in the hands of the carpenter. Common sense, therefore, directs us to grow trees, until of a certain age, without vigorous side branches. If, as already recommended, 4000 plants be put into an acre, their proximity to each other will discourage any very strong lateral branches, whilst the removal of the weak ones can have no hurtful effect upon the timber. In this lies the whole art of pruning larch and Scotch pines. A continued care must of course be exercised, by gradually thinning the trees, so as to admit air and light to the boles, yet at the same time keeping them close enough at bottom to prevent strong horizontal growths, which are of no use to the timber merchant.

ALSTRŒMERIA LIGTU.

STRIPED-FLOWERED ALSTRŒMERIA.

This is one of the most beautiful of a very handsome genera, and one which, because it requires more care perhaps than many other plants, is greatly neglected, if not altogether underrated. The Alstrœmeria was once a favourite subject for prizes at the Horticultural Gardens, and some very noble specimens have been exhibited; but there was no general emulation excited, although there is hardly a more showy or useful plant for the conservatory. The culture is simple, and consists chiefly of potting the plants out of their winter store-pots, which are generally sixty-sized, or forty-eights, into the pots they are to bloom in, using a soil of peat loam and decomposed cow-dung or horse-dung, and placing them on the front shelf of the green-house, and turning

them occasionally to prevent them growing one-sided. These will make very handsome plants and show the skill of the gardener to advantage; but many persons prefer large specimens, and therefore allow them to fill large-sized pots, and keep them over the winter; in this case they are necessarily shifted into still larger ones in March, or even earlier, and are grown into monsters. We prefer on every account parting the roots in the autumn, potting them in forty-eight sized pots, and peeling them as above. This variety is perhaps the best of the whole tribe, if we look to the form of the flower. If they are turned out of their store-pots in May into the open border they become very beautiful objects.

HORTICULTURAL NOTES.

Simple Mode of applying Heat to Annuals.—Dig out a trench three feet wide and eighteen inches deep, fill it with hot stable dung, treading it down so as to leave three inches thickness for mould, to fill it up level; upon this sow your seed under hand-glasses. It being upon the level of the rest of the ground does not spoil the appearance of the gardeu, and the only care required is always to cover and give air by closing down and tilting up these glasses. The advantage of this is chiefly felt in small gardens, seen from the house, in which places heaps of dung are in appearance, as well as in every thing else, great nuisances. The seeds, which would for the most part be tender ones, might grow till it was time to plant them out, and the end of March would be the best time to sow, that in a few weeks they may be large enough, and the season be advanced enough, to plant in the open air. I have a garden between four walls, every inch of which is seen from the parlour window; and as I grow nothing but flowers, I have in a load of dung already prepared,—have my trenches dug out and that put in, the mould thrown over it, and the bed made for sowing the seed all in one day. My glasses are ornamental, so that there is no eyesore whatever.—*R.*

The Verbena.—This plant is rapidly coming into notice, not less for its use in the garden clumps than its appearance in vases and pots. The colours are more than ever diversified, and each season adds brilliance and beauty to collections. Some persons are checking the advance, by selecting bad instead of good ones from seedlings. We have seen some of the new varieties approaching the standard pretty well, though there is much to do yet; but the colour of a new sort captivates many growers sufficiently to prevent raisers from doing as they would. Those, however, who wish to advance the flower should never select narrow petals nor notched ones, for neither can be good, and the presence of them in a collection would spoil the seed. In choosing any for the garden, fix upon such as are very broad in the petals, in preference to any other quality, and when you have done this in each colour you will have laid the foundation of a collection; but if they are for the flower-garden alone, you have a second point to look for—you must have them dwarf, for a tall straggling Verbena is good for nothing.—*T.*

Ants.—However these pests may plague you, all you have to do is to make deep holes with a crow-bar, say two or three feet, and carefully withdraw the instrument so that the hole may be open; thousands, aye millions of these little pests will fall down them, and not get out any more; in fact the place will in time be completely cleared. When they congregate away from plants, boiling water will settle their accounts quickly; but the former method will do any where if the ground will allow of holes being made and the holes kept open. In some light soils it is difficult, but if you can do it no other way, soak it with water first.

Steeping Seeds.—It appears almost incredible that the merely steeping of seeds should have any prolonged effect on the plant itself, yet the evidence is so strong, if credence can be given to the proceedings of public institutions, that it were idle to dispute the fact; nevertheless, evidence of experiments should be received with caution. That a good deal more has been attributed to steeping than ought to have been is certain, and that many whimsical nostrums have been put in requisition is also obvious. The best authenticated is perhaps the effect caused by steeping in muriate of ammonia, and we think that as the fertilizing effects of so small a quantity as half an ounce in a gallon of water, and that used only once in six waterings, are proved, it is not too much to suppose that the steeping of a seed which would imbibe a considerable portion, may assist the future vegetation.

Advice to Dahlia Growers.—When crops have been grown time after time from the same seed, each crop gets weaker; experience teaches that Dahlias are not different in this respect from potatoes. Whoever dreams of planting his own seed potatoes, as men do their own Dahlias, twenty seasons running? Nobody. Then Dahlia growers, take the hint, change a root of all your collections that do not do well with you, because they require a change as much as a potato. The great blunder that you have all made, is that of throwing away sorts which you call worn out, only because they are tired of your stuff, and your treatment. Dahlias no more get worn out than any other plant, but you treat them worse than you treat any other plant. Hundreds of old Dahlias have been thrown away, that, if now produced would win seedling prizes. Let us have no more such neglect, for it deserves bad flowers.

Thorn Hedges.—The Thorn has been found to answer for grafting various subjects on ; not the many varieties of its own genus, but the pear; and in an internal hedge, a pear was grafted on every plant that on examination proved strong enough to carry it, and they all did well for years ; but if this were done in a boundary or outer hedge, of course the owner would never get the fruit ; nor is it much more certain that the flowers would be sacred if grafts of the more beautiful varieties of the thorn were placed on them. Yet there can hardly be a more pretty object than the varieties of thorn well placed about grounds, and standing in rows towering above the edges. Thorns, however, can be bought at the nurseries as standards or dwarfs, and all worth notice in the ordinary planting, for the standards may be planted among evergreens, or wheresoever the stem is hidden; and there the head throwing out its white, or pink, or scarlet, blossoms, single or double, as the case may be, and adding greatly to the effect, will make a figure of themselves without interference with the clumps or borders.

Birds in Gardens.—No man in his senses will deny that we are greatly indebted to birds for keeping down much of the mischief caused by insects, nor is it to be disputed that there are seasons in which they are destructive to our crops. The object of all gardeners, then, should be to manage matters so as to avail themselves of the good offices of birds, and to prevent the mischief. Is this to be done without expense ? Certainly not ; nor can any advantage be secured without cost. At sowing time, as well as in the time of seed-ripening, there must be a sharp look-out, and they must be frightened away; and where any kind, no matter what, abounds too much, they must be killed off to a reasonable quantity. It is possible to encourage birds to such an extent as almost to defy all efforts to scare them, but it would be quite as unwise to kill all as to spare all ; few subjects have been so extensively discussed with so little profit ; common sense should tell us, that birds, like fire and water, may be capital servants, but bad masters.

Seeds of Dahlias and other double syngenecious Flowers.—In saving seeds for sowing, never take them in the centre ; take none but petal seeds, for they will give the largest proportion of double flowers. China Asters and Dahlias have generally some disk seeds, if they are even very double; therefore on taking the pod to get out the grains, begin from the outside, and when you have got a few of the rows of seed from them, throw the rest into a common sort, which you may give away or sell ; but building upon the chances of good flowers, you will be much better paid for your labour by the few outside seeds, than ever you can by sowing the whole. This is worth attention.

The Anemone.—The great distinction between this and the Ranunculus is, that the former has a very large seed-vessel, which petals could hardly hide, and the other a small one, which the centre of a double flower conceals. The former has, as yet, hardly been seen with more than three or four rows of petals ; the latter has an almost countless number. There is, however, a double kind of Anemone, which has a row of broad petals, and the centre a confused mass of florets, generally of another colour. This description of flowers is the only variegated double one ; the others are only valued as an approach to double flowers of the ranunculus form ; and those who pay the most attention to the semi-double kind with the large seed-vessel, instead of the recognised double kinds with the mass of florets, will the soonest make an advance towards perfecting the double Anemone.

Impurities in Rain-water.—Caution is required in the use of rain-water, as many impurities very likely to come into it are poisonous. I, for instance, once damaged, nay, and killed some valuable plants, by using the water which, from the roof of the glass-houses, was all saved in tanks within-side. The entire had been painted, and the first and second rain after the painting did all the mischief. I afterwards found it was the lead. Another time I injured some geraniums, by using the last drainings, as it were, of the rain-water tank ; and found the cause to have been a vast excess of pigeons' dung, which washed from the roofs on which they congregated. The effects were not perceivable while the tanks were full, or nearly so ; but when we came to near the bottom it was fatal ; and it would be so in a common water-butt, where pigeons were kept.

Sunflowers.—The Company intended to be got up for the cultivation of this plant seems to have proved a failure ; nevertheless, the plant ought not to be lost sight of, as the seed will assuredly bear a price at market for the purposes of manufacture. That it is very fattening to poultry is certain, but we are not quite so sure that the meat of it would be free from a particular flavour not altogether agreeable, as poultry fed on fish always, more or less, indicates the fishy taste. The great object, we presume, would be to grow them for oils, of which the seed is very full. Then, again, it has been hinted that the fibre of the stem is fit for mats or ropes, and other rough cordage. The Sunflower will grow well in rows, two feet apart in the row, and three feet between the rows: they may be sown the end of this month in heat, planted out in June, and will bloom and perfect their seeds admirably; but care must be taken to frighten away the birds as the seed begins to ripen, or the whole field would be cleared. The heads should be gathered as soon as the seed begins to colour, but the crown blooms will be ready long before any of those on the lateral shoots. It is a showy flower, and used to be a favourite in large gardens.

Potatoes.—There is a new potato, called Thurston's Victoria, of which the most extraordinary stories are told as to its bearing. I do not doubt the facts, but I saw, I should think, two bushels taken from four potatoes once; they may be said to have occupied in actual measurement a plot two feet in width and six feet in length; and this was by the grower multiplied by as many such plots as there were in an acre, and it was given out at once that the said potato yielded so many tons to the acre; but the four potatoes were taken infinite pains with, and the place all round them bore nothing, for it was robbed to earth them up, and the mere little plot which they occupied was no criterion of the space required; that plot was all potatoes, and there was no fairness in estimating an acre equally filled, because it would be impossible to fill it. I do not say Thurston's Victoria depends on any such recommendation, but all stories about a thing yielding "at the rate of" should be read with caution. I consider any good new potato an acquisition, therefore mean not to discourage any.

Cabbages.—Nothing is more common than making about two sowings do all that is required of this universally approved and useful vegetable, and they are kept stunted in the seed-bed (or perhaps run to seed there) for the purpose of taking plants out whenever there is a place to fill up. Now I opine that no vegetable is better worth the trouble of growing well than a cabbage; and for this purpose I recommend, as I practise, the sowing frequently, that the plants may be taken at their proper stages of growth for planting out to cabbage. By frequent sowing, that is to say, once a month during the growing season, and by pricking out into nursery beds as soon as the plant is large enough to handle, you can always contrive to keep plants that will answer the purpose of a short or prolonged growth. The advantage may be felt another way: there is no complete failure, no quarter of the ground need be idle six weeks, because you are always ready to fill it with this excellent vegetable. As to the sorts I am almost indifferent; I have planted for years only two sorts—the true early York and the Imperial—both are excellent, and if taken in season I do not know which is the better of the two.

Curious Question.—Gentlemen's gardeners are said to cut their employer's flowers and send them to Covent Garden market for their own gain; and among those societies in which distinctions are made between dealers and amateurs, there is a disposition to call these gardeners dealers, and they are objected to. Among amateurs and gentlemen's gardeners, who will not willingly show with them, the question mooted is, whether the supply of cut flowers to sell at market constitutes a dealer in flowers, and if it does so, whether they have any right to show in a class from which dealers are excluded. On the one part it is held that trading in cut flowers is not trading in the sense contemplated by the laws of such societies; and a declaration from the societies themselves can alone settle this matter. The real issue can only be settled one way, but the superficial question may be decided any how by the societies, one of whom may decide that flower-sellers are dealers, and one that flower-sellers are not dealers. It is certain that the trade in cut flowers as now carried on is a new one, and I should like to have your notions.—*D. D.* [We think it one of those cases that must be settled by the committees themselves; we must otherwise take the common-sense view of the case, and say that dealers are dealers.]

The Cutting of Asparagus.—Although much has been said upon the proper mode of cutting asparagus, I fear it has been lost from its having appeared among common directions, from which all men who know their business, and all those who think they know it, turn without reading. Now it is really worth a gardener's consideration to send up asparagus to his employer's table in first-rate order, rather than in first-rate style; and he can only accomplish this by getting the cook on his side, and inducing him or her to send up two dishes, one with the usual purple knobs at the end of white finger-looking buds, and the other three inches of green eatable vegetable, with hardly an inch of the white, hard, uneatable stuff upon it. The one is cut as soon as the knob is fairly through the ground; the other is allowed to get two or three inches fairly through the soil. Employers would soon discover which sort they liked best, for there never was such a mistake as that of considering asparagus in perfection before there was a good three inches of eatable vegetable attached to them.—*B. M.*

THE HORTICULTURE OF INDIA.

It occurs to us, that the Government and Horticultural Societies are alike unmindful of some very essential points in the various designs for encouraging science ; and that we may learn something from our friends in India, who, so along ago as 1836-7, entertained much better notions than we appear to possess, even at the present day. There was, even at that period, and perhaps before it, some idea of employing the most effectual means of disseminating useful horticultural and agricultural knowledge. Let us consider whether we could not take a lesson from the Indian Agricultural and Horticultural Society's proceedings. In 1837, while Lord Auckland was governor-general, we find the first prize in their schedule was two thousand rupees for the best work on Indian agriculture, founded on experience in the country. The second, was one thousand rupees for the best work on the agriculture of Bengal. The third was one thousand rupees for the best work on the horticulture of the Western Provinces. And the condition of receiving these premiums or prizes was, that the authors should publish the work within six months after the receipt of the prizes ; or, if not, the Society should have the option of doing so. Subsequently, in the same year, however, we find a member of the Society proposing to offer one thousand rupees to any person who would compile, in English, an Indian Gardener's Manual, and that the Society do subscribe for two hundred copies of the translations in the native languages, which proposal was referred to the committee : all these things indicating the extreme anxiety of the Society to make use of that most powerful and important engine, the press, to further their objects, well appreciating the influence commanded by publications. It may be remarked, perhaps, in defence of England, that there are already too many, rather than too few, works on Agriculture and Horticulture. The Royal Agricultural Society does not think so, so far as they are concerned ; for they very properly offer handsome premiums for essays on particular subjects, which are pointed out, and on which information is wanted. But, to return to our friends in India ; we see that, on the presentation, by Mr. Millet, of six musk melons to the Horticultural Society there, with a paper on the mode of culture, the Society voted a silver medal and two hundred rupees for the exertion and expense which the experiment of growing them, undertaken by Mr. Millet, caused. This kind of acknowledgment keeps everybody upon the *qui vive*, and goes further than rewards actually promised for competition. Now, we are of opinion, notwithstanding the great number of gardening works, that many are far beyond a moderate man's compass ; that many more are useless, and that premiums for papers on subjects but imperfectly understood, could not fail to gain the attention of those who are able to write very excellent practical matter, whereas a great majority of what is now published, is either upon subjects with which we are well acquainted already, or is devoid of anything new upon those matters but indifferently understood. Premiums do not always stimulate clever men, but premiums which carry honour and credit with them do ; and we can say, from experience, that in India vast strides have been made in the sciences of Agriculture and Horticulture, through the earnest manner in which those who knew anything useful were invited and induced to publish it. The Society devoted to these objects—the Agricultural and Horticultural Society of India, whose transactions we may hereafter notice, has made rapid strides, and done much good, by the judicious manner in which they have distributed their premiums, so as to carry with them great credit and honour to the receiver ; and it is a pity so much is so ill distributed in England, for want of sound judgment at the head of those institutions which are established for the purpose of promoting the true interests of science. We have principally referred to the year 1836-7, because Lord Auckland was evidently bent on forwarding the interests of science generally, and especially whatever related to the improvement of the soil and its profitable appropriation. His lordship, being a great lover of plants, well knew the importance of giving encouragement to horticultural pursuits.

PRACTICAL GARDENING.

OPERATIONS FOR MAY.—THE FLOWER GARDEN.

Tender Annuals, not yet changed from the first to their second pots, should have a shift to the pots they are to bloom in, it having been found that, where there is room, and proper accommodation, they will answer very well to put actually from their seed-pan into the pots they are to be perfected in, because the roots fill the pot by the end of the season, and in the mean time they suffer not. In this respect annuals are different from shrubby, green-house, or stove plants of a more permanent nature, which, having filled a pot with roots in a season, live, and want room, and if their pots were large enough to last them two seasons, would not, in one-half the cases, do so well; whereas annuals, having perfected themselves, as well as filled the pot with roots, die, and are done with. Where there is not room to accommodate the larger sized pots at first, you must be content to shift them from the seed-pan to a small one, and, when it is required, from the small to a larger, and this is found to be necessary in almost all cases where room is any object; for instance, a Balsam is grown to fill an eight-sized pot in a season. An eight-sized pot takes the room of six pots, size sixty, or even more; while, therefore, heat is absolutely necessary to their proper growth, it is no small consideration, that instead of being able to grow a hundred and twenty, which you may by shifting, you should only grow twenty, and put them in the large pots at once. All these annuals in pots, which are to be bloomed in pots, should be kept close to the glass. Nothing conduces more to their healthy growth, and dwarf, stocky appearance, than this one point in the practice, the keeping them well up to the glass. For this reason hot-beds are far better to grow them in than green-houses or stoves; generally, in the higher kind of establishments, they have regularly heated pits, but Balsams and Cockscombs do best, in all their younger growth, with top light and free air, when it can be given. If they are obliged to be grown in green-houses, it is necessary to make the best of it, by growing in the front, and near the glass. If these annuals are intended for the open ground, they may be saved till about the fifteenth of the month, and planted out from their present situations; but if they are crowded in a seed pot or pan, they should be picked out into other pots, or even for a few days they must be kept in their present protected state. Where the gardens are small, and much exposed, pot culture, for the sake of turning out, must be adopted to some extent; for instance, as soon as the weather permits in May, you want the gardens gay all at once. Hyacinths bloom in the open ground, but even they should be in pots, for the sake of removing them the instant they are out of bloom, and to place other blooming subjects in their situations. To do this, many things, which by no means require it, should be grown in pots. For instance, Sweet-peas, Mignonette, Nemophila, Clintonea, China-aster, Ten-week and other Stocks, Convolvulus, and many other things; not because they would not grow better in the open air, but because you have a garden which must never be short of flowers, and therefore you must be able to take out all things as they decline, and replace them with things in perfection, or getting so. This is the case in thousands of country villas around the great towns, where ground is scarce, and the gardens in front are exposed. With annuals there is a great advantage in pot-culture for this purpose; for, however pretty a flower may be, it is of small service until it is about to flower, and yet, without pot-culture, you would be obliged to put up with its green foliage alone, until its proper time of blooming. So that a garden, to be gay at any particular period of the year, must, of necessity, be very bare of flowers a great part of it, especially all the autumn flowers. Annuals may, however, be sown out of doors the beginning of the month; they will flower later than those sown last month, and form another season. Annuals sown in pots, in heat, will, however, get forward much faster than those in the open air; and if you have omitted sowing, and want to save time, it will be worth sowing in pots, to turn out the balls whole, as soon as they are forward enough to do well. There is a strange mistake among the good people who talk of tender annuals and hardy annuals. They seem to make the distinction rather by the time they take to grow, than by their capacity to bear frost; hence we have among hardy annuals a number of subjects which are as tender as the most miffy exotics. For instance, what cold will the common Nasturtium bear? Why, the most unimportant frost will turn them as black as it would a geranium. The fact is, subjects that will bear sowing in the open air, come up after the frosts are gone, and bloom before the autumn frosts appear, are called hardy annuals; while others, which take longer time to perfect themselves, are necessarily started in heat, and nursed towards maturity by the time the frosts have gone, and can be then planted out and perfected before the frost disturbs them. Nevertheless, there are what people call

HARDY AND HALF-HARDY ANNUALS.—These do well if started a little before the time they can bear the weather, so as to give them a month's fair progress before they are turned out. Many annuals, however, bear sowing now, and will bloom and ripen seed before they die. Sweet-peas, Lupins, Convolvulus, Larkspurs, Ten-week Stocks, Collinsia, Gillia, China-aster, and many others, if sown immediately, will flower and succeed the more early blooming ones that have been raised in pots.

DAHLIAS.—All that have struck, and are in heat, should be placed in cold pits, where they will be protected by covering against frost, but be hardening off, as the gardeners call it, against planting out time; for they will not bear taking from the hot-beds to plant out, however fine the weather may be. The wind alone would cause them to flag, and be checked in their growth, sometimes past recovering the whole season. The seedlings also should be hardened off in like manner; for the cold winds would be as fatal to one as the other. About the third week it will be pretty safe to plant out your first season, which should be one or two of a sort, or more, according to the number you grow; but no one should trust to one planting, which would, at particular seasons, fail him altogether. It is proper to plant out one or more of a sort once a fortnight, until the whole are planted, for then they would form different seasons of bloom. Seedlings may be planted out a foot apart in the row, and two feet between the rows, if you have large quantities to grow; eighteen inches apart, and three feet between the rows, would be much better for the plants; but as the shape of a petal decides the fate of thousands, before they are fairly open, a foot apart will be sufficient when you are driven for room. As you have by this time done with the old tubers of most of the ordinary kinds, they may be cut up into as many pieces as will possess eyes, and planted out four inches below the surface, or into pots which can be continued in heat to push the plants forward, and planted out in their season; but as, generally speaking, they will overtake the plants from cuttings, and grow rapidly, they, or at least some of them, may be the first that are put out to bring early flowers. As soon as Dahlias intended for blooming are planted out, every device for taking the earwigs ought to be put in requisition, instead of neglecting them until they are coming into flower, because all earwigs destroyed at this early period are of as much consequence as killing wasps, and by the time the Dahlias are beginning to flower, this pest will be got under completely, though the traps must be continued through the bloom. Of the methods in use, the most effectual are small pots on the tops of stakes, and lengths of bean-stalks laid in and about the plants; but these must be examined, not only daily, but, if the vermin be at all plentiful, twice a day. A boy or man should be kept on purpose, where many are grown. In planting out Dahlias for blooming in perfection, they ought to be six feet distant every way, though we have grown them in rows running east and west, only four feet apart in the row, so that they formed a pretty close hedge, and then, instead of shading by other means, we merely contrived to get as many promising blooms as possible on the shady side, fastening them so that they should not be blown about by the wind, and also taking off or fastening all branches that might otherwise be blown about them; for a leaf touching the flower is enough to spoil it. We prefer, when going to plant out, to put down a single stake hard and fast into the ground for each Dahlia, and digging the holes that the Dahlias are to be planted in, after all the stakes are fixed. The ground should be well dunged, and if it has not been so, a good spit of rotted dung, or leaf-mould, should be dug in at every place where a plant is to grow, and be mixed up well with the mould of the garden. If, however, it is fresh ground, such as the turf of a field turned up for the purpose, they need no dung; the only danger in such a place is that of grubs, which will destroy a whole plantation in a comparatively short time. This, however, is generally detected in the turning up of the soil. Plant out after the ground is well soaked with rain, if possible; if not, soak the whole space well with water at the time you water them in.

Polyanthuses and Primroses, which have been bloomed in pots, should be planted out in good rich loamy soil, in a shady situation, taking the ball of earth from the pot, and planting it whole. If you wish to propagate them, you must shake out all the earth and part the roots, and then plant the pieces out with their labels to each sort, so as to know them. These must be well watered in, and, if there be any danger of slugs, draw a drill all round the bed, and fill it with lime; and if you have any reason to believe they are in the soil, lay cabbage or lettuce leaves, or bits of cabbage and lettuce leaves, between the rows, that they may be examined frequently, to catch these fatal enemies to Polyanthuses and Primroses.

Heartsease are blooming this month rather freely. If any bloom comes finer than the rest, mark it for seed. It is better to get the seed from a few pods of flowers that have been in fair character, than from many indiscriminately. If you are cultivating for show, do not let a bad bloom remain on; pluck them off one after another, without letting them grow to their full size; for it will keep the plant longer in good flowering order. By no means allow any to go to seed unless you actually want it; for every pod that is allowed to perfect itself greatly weakens the plant. Indeed, it is better not to allow any of the collections for show go to seed; but to plant some on purpose, in a place away from all others. Plant out struck cuttings, to make succession beds, and take off all the short side-shoots you require for other cuttings: they make better plants than the tops of long ones. Throw away at once all those varieties which disappoint you in the leading qualities, that is, general roundness, thickness and smoothness of petal, and clear edgings; those also of indefinite, flushing colours are of no use. Nor are any of those which have the under petals of two different whites, or whites and yellows, the colour, that is to say, the light colour, must be alike in the three under petals to be worth growing for show. Where a bed has fairly done blooming in perfection, cut the plants down pretty close, and earth them up well, giving them water in dry weather, and in a few weeks, or perhaps less, there will be a new growth. They may then be taken up and parted in most cases; for all the shoots will be found rooted: these may be planted out immediately for new beds.

Ranunculuses and Anemones. — The beds in which these are growing should be stirred up, and the earth closed about the tubers, which in swelling and throwing up their shoots always disturb the ground, and make it hollow and spongy; by bruising the earth, and stirring it an inch or so all over the beds, and pressing it close to the tubers, the growth will be greatly promoted. All the weeds must be removed; plenty of water must be given all over the bed in dry weather.

Roses.—Stocks which have been planted for budding will now throw out shoots. The stocks should be cut down to the top shoots, as all above these died. All the shoots but the top two or three should be cut off, or rubbed off close to the stocks, to throw all the strength into the upper ones intended to bud on, and these should be carefully selected, for the strongest are best. Any stocks that have been grafted should be examined, to see that none of the stock shoots are taking the strength away from the graft. Roses of all kinds, growing on stocks, must be examined, and the stock shoots rubbed off. Suckers, also, from the roots must be taken up; for if these be allowed to grow, they completely check, if they do not actually stop, the growth of the head. If any have been allowed to go unpruned, for the sake of making a late bloom, the shoots will have come out all along the branches, and be forwardest at the ends. Let them be cut back to a single eye, or two at most, which two will be found not started, perhaps not even swelled, the growth of the others having taken the entire strength of the plant to sustain them. These eyes will soon start, but will, nevertheless, be a month later than the others before they bloom, and thus keep up a succession. Towards the end of the month it may be well to make visits to the different nurseries, to pick out the best of the sorts that bloom in May, and keep up these visits monthly, through all the summer and autumn, for it is well to select each month by the bloom alone. Pick out such as have double, free-opening flowers, with thick petals, smooth edges, and well up in the centre, and if you see twenty-four of these out of the hundreds of varieties you will see in any one month, be careful to possess them; for the rose will not be perfect until we can get Societies to have them shown in stands, like dahlias. This will at once bring out flowers of good character, and make a great hole in the popular catalogues, which contain hundreds that are useless. Every one of the proper character will be raised in value; for it happens that whatever is most beautiful on a stand will be found most showy and rich on the tree or plant; but the petals must be thick and leathery, or velvety, smooth on the edge, and plenty of them.

Hyacinths, Narcissuses, Early Tulips, and other spring bulbs, are blooming, or very forward towards it. If possible, the flower should be protected from sun and rain. In beds, this is to be done by hoops and mats, or, which is better, transparent cloth made waterproof, as it does not take away the light. Towards the end of the month the flowers begin to decay. As soon as they begin to fade, pull them off, unless you want the seed. The roots ought not to be taken up till the foliage has decayed.

Carnations and Piccotees.—These are, or ought to be, in their blooming pots; and if their stage is only for themselves, they ought to be all placed in it; but as most persons who grow tulips make the tulip stage do for their Carnations and Piccotees, they may be kept on shelves, placed in pots standing in pans of water, to prevent the approach of ground vermin and many other things. Ground worms, when they are on the open ground, too often get into them, to the great disadvantage of the plants. All that remain after filling your blooming pots, should be planted out eighteen inches apart, and not more than two rows in a bed of 3 ft. 6 inches wide, each row within a foot of the edge, but eighteen inches from one another. This gives room to weed and layer them without difficulty.

Double Wall Flowers, having gone out of bloom by the end of the month, generally, will throw out many shoots. As soon as these are large enough to handle well, they should be stripped off, and put into a shady border, under a hand-glass, to strike; but they must be taken while not more than an inch or an inch and a half long, before the bottom of the wood ripens.

Sweet Williams, of any value, may be propagated by taking the shoots round the bottom off, and striking them under a hand-glass, like pinks; but they are frequently not ready in this month; however, these, like wall flowers, are better taken young than old, as they strike quicker, and make better plants. As these are found very often double and very handsome, it is desirable to perpetuate them. Of course no one will attempt to propagate ordinary kinds, which can be raised by millions from seed.

Biennials of every description can be sown now with advantage.

Climbing Plants in fronts of houses, such as the China and other Roses, Passion Flowers, Bignonias, &c., will often be infested with the fly. Nothing is so good for this as syringing with a fine rose on the syringe, but doing it forcibly, under as well as over the leaves. This, done properly, with only clean water, will do a good deal towards cleansing them; but if they have been neglected, and gone too far, syringe with lime water first, and clean water afterwards. A few days' neglect will completely destroy the foliage and young buds of a China Rose, and it is as bad with many other fast-growing subjects, such as the more delicate Tropæolums.

Plant out Verbenas, Fuchsias, Petunias, Heliotropes, Geraniums, tender annuals raised in heat, and all clump and border plants that required winter or early spring protection, giving them room according to their habit. Verbenas of the trailing kind, like Verbena Melindres, may be placed a foot or more apart, if you have but few; for they will spread over a large space. Where the subject will allow of it, the ball should be taken out of the pot whole, and be placed in the soil of the border or bed, level with the surface.

Pinks.—Remove from the plants all the rising spikes for bloom, but one to each plant; and as the end of the month approaches, remove all the buds but two or three of the best on each spike. Do not let those which are left be close together, as they would not be easily managed, but let them be such as can be both allowed to bloom. Regard must be had to the season for showing. If you find them rather forward, let the forwardest blooms be pulled off. They may have a top dressing of decomposed cow-dung, or be watered with liquid manure, made of a shovelful or two of well-decomposed cow-dung in a tub of water, at the rate of a shovelful to two pailsful; and, when it is well stirred together, let it be given with a watering-pot without the rose, pouring it freely between the rows of plants, so as to well soak the bed. This need only be done once or twice, a fortnight apart, using ordinary rain-water at other times, if it can be got. When pump-water or well-water is necessarily used, it ought to be exposed to the atmosphere for some days, if possible; indeed, a tank is necessary, or a large shallow vessel, whenever the water used in gardens is naturally hard.

Tulips.—From the time these show stripes in the green they ought not to have the hot sun; they should have the top cloth on, pretty soon in the month, and this should be watched so as to keep off the burning sun, but be rolled up as much as possible, so that this is secured. The early part of the month the bed may have gentle showers, but after they have been wetted they must be covered well from frost; and if the weather happens to have been parched and dry, there will be no harm in giving them a good syringing all over the foliage, but it will be necessary to continue the shading in the day until the sun is pretty low down, when it will not be powerful enough to hurt them. The sides of a tulip stage should be removable, or planned so as to open without difficulty. The opening should always be on the contrary side to the wind in gusty weather; but when there is but little wind, both sides should be open; so also in cloudy weather the top cloth may be rolled up, it being universally admitted that it is impossible to give the tulip too much air. With all the care that can be given, they will occasionally draw up, and there is nothing but plenty of air and light that will prevent it. If they, or any of them, do come a little weakly, they must be supported by a bit of stick, and a small wire attached to it to hold the stem of the flower up as near under the flower as may be. If, as is sometimes the case, the generality of them are drawn, it is best to put a stretched line along each row, to half support them, and, if necessary, the weakest may be fastened to it. The out-of-door beds, as they are called, which means those not much, or not at all protected, may be prolonged in flower by keeping the hot sun off. The breeder tulips should be carefully examined, to see if there be any newly-broken flowers worth noticing; and if there be, a covering of some sort, to preserve it from wind and rain, should be continued; otherwise the perfection of the flower would be so transient, that it would be almost impossible to show it three days. All the half or partially broken tulips should be marked and planted in a bed by themselves, the coming season. As soon as the flowers are beginning to decay in any of the beds, the seed-vessel should be picked off, as the swelling of that greatly weakens the root: and when the foliage has turned yellowish, and the stem has dried half way down, they should be taken up; the stem, all but an inch, should be cut off; but if it is attempted to break the bulb from the stem, there will frequently be a piece of the bulb come out, which is very detrimental to it. They should be laid by partly in their dirt in the shade, until they are fairly dried, when they may have their dirt and rough skins removed, and be finally put by; but it is only in very early seasons that they are ready to come up in May; nevertheless, as they are sometimes, and as some of the forward out-beds and borders are frequently ready by the end of the month, it is as well to mention it. All the early tulips, and many spring bulbs, are ready to take up, and should be taken up before the end of the month.

Herbaceous Plants, and perennials of all kinds, should be sown, or parted, if wanted for propagation, as soon as their blooms decay. All the perennial Lupins, especially Lupinus polyphyllus, the Penstemons, Antirrhinums, Phloxes, Salvias, Digitalis, Delphiniums, Campanulas, Columbines, and many others, come from seed as well as parting the roots. This is the month for sowing all kinds, and for parting such as have gone out of bloom. The pieces ought not to be too small, though a good heart and a piece of root will not fail to make a good plant, if care be taken to give it a good situation and a good bed of stuff, with room to grow. They should be well watered in, and the best time to put them out is evening, after the sun is down, though with such as are not very delicate, very little care is required beyond giving plenty of water when they are first planted out. Another point to be taken notice of, is the necessity of parting and planting at the same time, or nearly so, that the plants may not suffer by drying and flagging before they are put in the ground. In sowing the seeds no great care is wanted; they may be sown in patches or drills very thinly, because they will not only come up stronger, but there will be less trouble to thin them out, and it will be as well if they do not require it at all until planting-out time, which is when the plants are large enough to handle well, and have root enough to go down a little into the fresh earth provided for them.

Sundries.—The gravel walks ought to be turned and rolled, the lawn and edges of grass should be mowed, all things put in order; the borders and beds forked and raked even, any straggling branches of ornamental trees left in the way, ought to be taken off. Rhododendrons and flowering shrubs should be well watered, if the weather prove at all dry or parching. Geometrical gardens, or as they are called, Dutch gardens, and flower-beds near the house, should be filled with something immediately, if not done; and the flower garden throughout should be what is called properly furnished. Weeding comes as a matter of course, as does watering in dry weather, tying up rose-trees to stakes, and placing sticks to climbing plants in the open borders; examining all the plants that should have labels, to see that in dressing the ground, and forking and raking it, they have not been removed; and if they have, to restore them again while you can see what the plants are.

THE STOVE.

Nearly all the growing specimens may now require to be shifted to pots a size larger, many of the Gesneras, Achimenes, Brugmansias, Euphorbias, and Clerodendrons. Those which are showing bloom require frequent watering; forced plants and flowers may now go into the conservatory, as soon as they show their bloom. Climbing plants want almost daily regulating, to prevent their shoots from growing astray. Plants that have been in store pots may be put out one in a pot. All the plants through the house must be carefully examined, for the presence of meally bug and scale requires instant exertion. Soft soap and water, with the syringe, tobacco water, lime water, and plain soft water, are so many remedies for evils; but if the bug or scale once takes possession, it must be eradicated at every cost. If the plants be not too large, they may be immersed, wrong side upwards, in tobacco water for a minute, and after an hour or two be syringed with plain water. If this does not get rid of them with one application, they must have two; and we have seen it necessary to use a brush and a soft soap lather with many foul plants before the filth could be removed. The brush should be like an ordinary shaving brush, and the water rather warm. If any symptoms of this bug be discovered in a single plant, you must redouble your activity in examining all the other plants about it; for the meally bug increases rapidly, and three or four days would, in a hot season, give it such an ascendency as to cost many days of hard work to get rid of the evil, and perhaps hardly have the house clear again. Keep the stove very clean; remove all dead leaves and dirt; stir the surface of the tan, and remove all fungi, which are very apt to come up between the pots when they are long undisturbed; keep up a moist atmosphere, by watering the floors and pipes of an evening before closing.

THE ORCHIDEOUS HOUSE.

Perhaps, with all the mystery that has been made of this department of Gardening, there is hardly a tribe of plants easier managed. The attention is not of the same kind as that to the kitchen garden, but infinitely more simple. Many are now coming into bloom, and if the house were permitted to be dry, it would be fatal, not only to the blooms, but to the growth of many plants. They derive their chief nourishment from the damp of the atmosphere, and if this be withdrawn, or not supplied, there must something go wrong. We have grown many orchideous plants in the ordinary stove; but some stove plants suffer by the quantity of moisture which these epiphytes require. In consequence, we have a slight partition of glass at one end of the stove, and that we keep moist, while the other has no more than the ordinary stove plants require. This moisture, then, will be better managed in the orchideous house than in part of another, because the heat may be greater, the flowers open more freely, and much larger. Orchideous plants, when grown in pots, rarely do well, unless potted in large lumps of peat turf, which allows air and moisture to pass well through it; but even they do better when the roots find their way outside the pot, and they will rarely want shifting, because they will depend but little on the room in which they are placed; but baskets are better, logs of wood, any suspended situation, far better than pots, except some particular kinds. The principal object this month is to keep up the heat and moisture.

THE GREEN-HOUSE.

All the Botany Bay plants are now in perfection. The young plants which are rather wanted to advance, may, if not yet shifted, be put into a size larger pots. All struck cuttings may be potted in the smallest pots, and placed in a shady part of the house to grow, and as soon as their roots reach the sides, they may go into those of a size larger, for at this season they will make large growth. Most of the plants as they go out of bloom should, unless you want the seed, have all the blooms that are decaying cut right away. This gives the plant more freedom to shoot its new wood. Camellia Japonicas, now making growth, should be removed to the conservatory if large, as they form a fine evergreen, and to the pits out of doors if small. Hoveas, Acacias, and Epacris, should be shifted if the pots are full of root, or indeed if the roots reach the sides at all, as it will give vigour to the new wood. As all the young plants are growing fast, take off the ends of the leading, and any other vigorous shoot that you find growing faster than the rest, to prevent the plant growing out of form, and to induce side shoots; and, generally speaking, you should be watchful of all growing plants, to check all branches and shoots that come wrong, or they will soon get out of form; specimens that are coming forward for bloom in June, will derive benefit from a few hours out of doors in mild weather, and even a mild shower; fumigation must be attended to if there is any show of the green fly; syringing is also useful to clean from dust and dirt many strong plants.

THE CONSERVATORY.

This is, indeed, a gay month; for the assemblage of beauties is great. The Cineraria, with its gay, starlike flowers, in endless varieties of colours, the flowers still in beauty; the Rhododendrons and Azaleas completely in a blaze of flower; Hyacinths and spring flowers generally in succession to those of last month. Some of the noble twiners which festoon the upper part, and especially the Clianthus puniceus, with its scarlet bloom in abundance, are contributing their aid to this important department. The weather must determine what heat is required; but not a fire should be heated wantonly; for the sun is powerful, and the heat shut within the house at night will preserve every thing against an ordinary frost; and an extraordinary frost will be plainly indicated through the previous day and evening. A good moderate conservatory will require an hour or two's work for two of the best and cleanest men the first thing in the morning, to remove all the decayed flowers and fallen petals, dead or dying leaves, and plants whose beauty has faded. It is well to tap the main stems of plants whose flowers are falling, that those too far gone to stand the day may be disturbed, otherwise they will continue falling all day long; but a gentle blow with the flat hand on the trunk of a large plant, or with the fingers to the smaller ones, will bring down all that would be falling and littering the place as soon as it is cleaned. The borders should be raked smooth, and the place swept out; replace the plants which you move by others just coming to perfection, not neglecting at all times a supply of Violets, Mignionette, Stocks, &c., which, being for the sake of perfume only, may be placed anywhere, whether they are seen or not, being of little importance, though by no means unsightly objects. Roses coming into flower in pots are pretty objects for the conservatory, and should be placed where their falling petals are easily cleared away. The conservatory, being the receptacle for plants of all temperatures, should be provided with hand glasses of handsome shape and make, something like the glass shades for curiosities, to protect any very tender stove plants that it may be desirable to keep there; for the draught of air which should be passing, however slight, will cause the blooms of many stove plants to decay before their proper time; and these glasses, unless ornamental, would be an eyesore in a handsome room. Provision of a succession of plants should be made for the summer months, when most of the plants in the border will have bloomed; and much pains will be required to keep up a good appearance of flower among so much green;—and here the annuals will assist you: the Balsam will do its part. Pots of the tender annuals, sown in them, and thinned out where they are small, or potted singly from the frame, if they are subjects that deserve it, should be always kept ready, and in succession, for a conservatory, wherein the Camellia, Rhododendron, Azalea, Hovea, and such like subjects, which attain a noble size, are planted, but are merely evergreens after this month; care is required to prevent an appearance of poverty in bloom. Standard Roses, in pots, help greatly: they stand among large plants, and their heads may be seen above the lower ones in front of them. In this particular they are invaluable; some blooming in June; others in July, August, and September. In short, you must look about you to keep a conservatory in good order, and prevent it becoming scanty of flowers.

KITCHEN GARDEN.

Melons and Cucumbers.—Those under glass frames, and on dung beds, require attention to the heat; and if the temperature has been much reduced, means must be taken to increase it. If the heat be from dung, the removal of that which has declined in temperature, and replacing it with hot, is necessary. With a common hot-bed, this must be done by portions; for instance, take away all that projects beyond the frame in front, and even undermine it a little, and then, in placing as much hot dung, press it together rather close, and put plenty of it; then serve it the same at the back. In the heat of the day, air may be given in considerable quantity; and covering the glass with transparent cloth or canvass, or old matting, while the sun is hottest, will be advantageous. Many persons use transparent cloth for cucumber growing, instead of glass; but the cheapness of glass renders any substitute of small value; and any substitute now would be dearer than glass in the long run, and not much cheaper even at first. The management of these matters under glass continues the same as already directed. The melon cannot have too much heat, and the more heat the higher the flavour; but it must have air with it. Melons should be grown in pure loam, and the little water required should always be kept in the frame, that it may be the same temperature as the internal atmosphere. It has been doubted whether, if there be strong heat, it be not necessary to tilt the light a little at the back, instead of shutting up close at night. There can, however, be no doubt, that it would be well to lower the temperature at night; the fruit would be greatly improved by it; but there would be mischief if the change were more than five to ten degrees. Under the ordinary management, the changes are curious enough. They are uncovered by daylight, or ought to be: they have a chill, therefore, to begin with; as the sun comes out, they are gradually warmed. They then have air given, and are shaded,—this, if not done carefully, gives them another cooler; in the evening, they are closed and covered up warm; and if the bed be what is called in good order, they are heated more than ever in the dark, when they ought not to be excited. In a general way, and the gardener may accomplish it how he pleases, the temperature should be lower in the dark than in the light. Melons should not be grown in rich soil, for it runs them into size without flavour; and although this may do for market, it is not good for use. The melon is a sadly mawkish fruit when not in perfection. It is not too late for those who have plenty of dung to begin melons now; sowing the seed and placing it in even the newly-made bed, while air is let out to sweeten it, will forward them, and they will be up about the time that the bed is in order to put the mould in. Throw in half-a-barrowful of clean undunged loam, like a cone, in the centre of the bed, and spreading a little all over the dung. As soon as the seedlings have four leaves, they may be planted three in the centre of the frame, first forming a sort of basin in the cone of earth, the bottom of which should be six inches deep of mould. If this be not carefully done, you are apt to work the loam out, so that it is too shallow, and the plants do not thrive; in time the whole frame must be six inches covered, and then it will be level with the plants. As soon as you can get hold of the centre or main shoot—or, as it has four rough leaves—pinch it out to force side growth; and then, as it throws them out, regulate their growth so as to cover the bed: it may happen that only two side shoots come out; in that case, as soon as they are three joints long, pinch out the end of them, and they will throw out lateral shoots enough: when a shoot is getting towards the side or end of the box, take the tops off, and continue to manage them as previously directed. They should be constantly watched, and only have water when they almost flag for want of it. High flavour can never be attained in large fruit. We do not mean that a large sort of melon cannot be good; but that large growth is incompatible with high flavour; that is to say, that, if a melon can be grown to two pound weight by excitement and high feeding, but would, under plainer treatment, not weigh more than one, the one pound melon would be much higher and better flavoured than the two pound one. This we have seen exemplified in Duncan's Green-flesh, which were grown from the same sowing: one literally half-starved; the other well-fed: the one, three-light box, gave rich, high-flavoured, but small fruit; the other, large, handsome, but much weaker flavoured. The one did to show for prizes where they were cut; the other did to show where they were not cut.

Cucumbers to pickle.—Sow, on or about the 20th of the month, a few seeds in the open air, and then heat them the same as you would in a bed, except that you plant three in a patch, when they are large enough, in beds three feet wide, down the centre of the bed, the patches of three being three feet apart. The plants have to be topped when they have four rough leaves. Some prepare the bed, and sow four or five seeds in the place they are to grow, leaving the best three standing, and taking the others away. Here they grow as they like, except that when they throw out their shoots, they must be regulated about the bed, and pegged down, that the wind may not blow them about.

Cucumbers on ridges.—This is simply growing cucumbers out of doors, and may be managed with or without dung. In the one case, they are planted out the middle or even the beginning of the month, under hand-glasses, as forward as they can be grown well in pots, and only require the hand-glasses until the end of the month; by which time they will more than fill the glasses. Some growers, however, prop them up, and allow the shoots to grow out beyond them. When they are grown with hot dung, the space of three feet is dug out a foot deep, and the dung put in and pressed pretty close, but piled up a foot above the surface, and sloped down to the surface in front; the soil dug out is then put on six inches thick all over, and what is over is used behind, as a bank to the dung that is above ground. This forms a slope down to nothing, as it were, and a foot from the back of the dung the plants are put in and covered with a glass. The heat assists greatly in the early part of the month, and keeps the fruit forward, and in quicker growth, which is always desirable, and which, in fact, makes all the difference between frame and field cucumbers; those grown thus being intermediate.

Tomatas, Capsicums, Chilies, &c. should be planted out this month, about the middle or end, against a south wall, if you can; they will do well between the trees on a fruit wall. Turn the balls out of the pots whole, without disturbing the fibres, and water them well in, to settle the earth about the roots. The tomatas should be nailed to the wall with webbing or shreds of cloth, the same as you would a fruit tree. Chilies and capsicums should, however, be also grown in pots, to make sure of some, be the season what it may.

Vegetable Marrows should be turned out in warm borders. They are grown in great variety; and the great object is to cut them at a proper time: this ought to be before they form their seeds. In short, they can hardly be cut too young. There is hardly anything which runs into so many varieties; and as to their value as vegetables, we believe they are more for appearance and novelty than for their flavour. Pumpkins, which are rather grown for their enormous size, as curiosities, than any thing else, should be planted out about the middle of the month; and, if not sown yet, may be sown in peat, one in a pot of the sixty size, and kept in a hot-bed until the planting-out time. The ground can hardly be too rich for them, nor be in too warm a situation. Only one fruit must be allowed to perfect itself on a plant: but, to select the best, let three or four get as large as a cricket-ball before you make up your mind; then the most handsome and free-growing one may be retained, and the rest pulled off; and all that may afterwards come must be removed as soon as they show themselves.

Celery.—Plant out a few trenches, dig them a foot deep, and fork in a good quantity of very rotten dung at the bottom; in this place your plants, which should be cleared of any side branches or shoots that may be starting. Prick out from the seed-beds, or seed-pans, all the seedlings as soon as they are large enough to handle; let the bed prepared for them be rich with well-rotted dung, and put them in about three inches apart, there to grow into strength ready for planting out in their season. As those which are in trenches grow, the earth must be drawn down into the trenches, and close to the stems, which must be closed always, that the earth may not get into the hearts of them. When they get larger it is sometimes necessary to tie them with a bit of matting half way up, and when earthed up, to cut the bast matting and free them. This, however, is only done when it is grown for exhibition.

Endive.—Sow the ordinary kind of curled Endive, and the Batavian, which is nearly as mild as a lettuce; but a small quantity will do for this sowing, and it should be in rich ground.

Peas.—Continue the sowings of the different kinds, but keep the quantities about the proper amount with regard to the previous and intended future sowings; for, where you do this every two or three weeks, the ground would soon be crowded with one subject, though perhaps there is no garden production so universally a favourite. Draw the earth about the stems of those already up and ready, and stick such as require it; indeed, even the most dwarf pea is the better for sticking, if it be only with sticks a foot high. Waite's Queen of Dwarfs, and Groom's Dwarf are the best, not even excepting Knight's Dwarf Marrow. The former has been grown, and approved in the Royal Gardens, and the flavour pronounced exquisite by the official authority, by command of the Queen, and is at present dear, but should be grown, if it be only for seed.

Cauliflowers.—Plant out strong plants in good, well-dressed ground. They should be two feet apart every way, though many give them only eighteen inches in the row, and the rows two feet apart. Many of those under hand-glasses are showing flowers, and about the middle of the month the glasses may be taken away. Where the flower shows, break down the leaf or leaves so as to cover it from the sun, which would cause the colour to be bad, as the sun turns the flower yellow in a very short time. Cauliflowers under glasses must be watered in dry weather rather frequently, and occasionally in wet, because the glass prevents them from receiving the benefit of a shower; but in mild weather they will derive great nourishment from gentle rains; the glasses should, therefore, be removed on such occasions. Sow cauliflower seed towards the end of the month.

Brocoli.—Sow at the beginning of the month. The Cape is one of the most useful of all, but some of the hybrid kinds, such as are nearly approaching a cauliflower in appearance, are well worth cultivating. All the sorts may be sown in seed-beds; it is best to sow them in rich ground.

Winter Greens.—All the sorts of Kale may be sown, so also may Savoys, that is, if not done last month; or if a small portion was sown last month, sow more.

Cabbages.—Sow seed of the quick-growing kinds, such as the Sugar-loaf, the Imperial, &c. Plant out Cabbages from the seed-beds; the spring sowing ought to be large enough, but all the autumn sown should be used first. Draw up earth to the stems of those already planted, and as soon as any begin to heart, tie them up like you would tie a lettuce, as it hastens the growth of the inside, and assists the bleaching. Plant, if possible, after rain; for it is better to wait a few days for rain in all planting operations. If the weather appears to have set in dry, and you cannot wait for rain, have the ground well soaked by hand watering. The distances for Cabbages to grow large should be two feet apart in the rows, and three feet from row to row; but where there is a call for a supply of the smaller kinds, or for greens, they may be planted six inches apart in the row, and two feet from row to row. As soon as the plants have grown large enough to eat as greens, two out of three may be drawn out, and the others left to cabbage.

Carrots.—Sow for a supply to succeed those of last month, and for all but the winter store the Early Horn is the best, because it grows quickest; the Altringham is better for the main crop to store up in winter. Hoe the crops already up, and leave them not less than six inches apart.

Parsnips may be planted out, or if they have been sown where they are to grow, let them be thinned to nine inches distance every way; let the ground you plant them in be good, and they may be planted in rows a foot apart, though the parsnips are only nine inches distance in the rows.

Lettuces.—Sow seed of any of the favourite kinds, the white and brown cos especially. Plant out all the sorts from the seed-beds; these may be a foot and a half from row to row, and a foot from each other in the row. Draw the earth up to any that are already planted out and growing. Wait, as with cabbages, for rain if possible, for they will do infinitely better than with any amount of watering. If the seed-bed be of any size, some may be left at proper distances to heart there.

Salads.—Continue to sow every month, if the supply is required, and thus keep up a succession. Corn salad is a very useful article.

Turnips.—Thin out any turnips that are already up, to give them room to swell. Remove all the weeds, and leave the plants a good six inches apart. Sow more seed after rain has got the ground in good order, to bring them up quickly.

Asparagus.—The beds in the open air are supplying the table, and should be cut for a family very differently from the way in which it is cut for market. For the sake of the carriage, perhaps, on the one hand, and a capacity for keeping some days without showing it on the other, the market people will have them cut as soon as the bud is fairly out of the ground; so that, to the public, a large portion of whom are not judges, the bundle appears much the same after a week's keeping as it does when taken to market; and as this is an expensive article, it is an essential point for a shopkeeper; but for the table which is supplied direct from the garden, the asparagus should be allowed to grow three inches out of the ground, which would enable the consumer to eat four times as much of each bud. Again, the earth need not be disturbed to cut it, for one inch below the surface would be as good as six. Asparagus beds must be hand-weeded, and it is as well to do this in going over them to cut, as at any time.

Scarlet Beans.—Plant out the first of the month in rows, as they are excellent subjects for screens at any part of the ground where there is an object to conceal; for they may be stuck at once with the tallest sticks you can get. Of course your quantity must depend on the supply you require, and one planting is enough, because they will keep growing and bearing until the frost cuts them off. If they are grown in rows, the rows should be four or six feet apart. This is a favourite crop for a family, and unquestionably the best of the bean tribe; though some prefer the French bean, harrico, and kidney kind, which are smaller and smoother.

French. Kidney, &c. Beans.—This month the principal crop should be sown, or if they have been sown for planting out, they should be planted out about the middle of the month. It is, however, better to sow them in thin rows the first week, about nine inches apart in the rows, and the rows eighteen inches or two feet from each other. There is a large white kind, which the French call harrico beans, and which are excellent stewed; these should be sown in the event of your requiring the dry seeds, as they are free bearers, and a few rows will yield a good many seed.

Broad Beans.—Plant a few more of any kind, to succeed previous sowings; that is, if you are likely to want a further supply: it is not generally a favourite.

Beet Root.—Hoe or thin them out so as to leave every root a foot of room. If you have not as many as you want, take up the roots instead of hoeing them; and if removed carefully, without breaking the fibre, they will plant out very well; but those which are where they were sown will do best.

Crops in general.—Go over all of them carefully, to weed and thin them where it is required. Water in dry weather such of them as appear to want it; earthing up the stems of plants in drills, stirring up the surface of the ground between the rows, destroying vermin of every description, particularly grubs and slugs. If there be no other way, set children to catch them, for they destroy every thing they attack; nothing, perhaps, being more offensive than caterpillars, snails, slugs, &c., in any vegetable that has to be eaten. It is seldom all these things are done in time, and if they are not, the labour is increased, besides being less efficient when done, if the crops are half eaten before the insects are destroyed or disturbed. Perhaps in dry weather there is hardly a more efficacious way of destroying the grubs which infest gooseberries, and indeed everything, than with a syringe or garden engine, with a fine rose, so that the water may be forced pretty strongly upon the trees or vegetables, and dislodge them without breaking the leaves or shoots, or otherwise hurting them. Frogs and toads should be encouraged; in shady places bricks may be placed to form a harbour of refuge; place them in this manner, Π, and one across the top in many parts of the ground, particularly such parts as the slugs and vermin infest. In a general way be cleanly and tidy; frequently raking and hoeing the ground does much towards destroying vermin; they never prosper much where they are frequently disturbed.

Parsley is sown most in the autumn, but it may be sown early this month, and will grow rapidly if kept watered. That which was autumn sown and now growing, should be what is technically called rogued; that is, as the curled leaf only is valued, all the plants which do not exhibit this desirable peculiarity should be pulled up as useless. Parsley may be sown in drills in any particular quarter devoted to it, or as edging round the kitchen garden.

FRUIT GARDEN.

Contrive that all the espalier trees shall be examined, to see where they are loosened from the frames, and have them tied or otherwise fastened. Rub off while young, all the buds and young shoots that are coming where they will not be wanted. Thin all the fruit as soon as it is set well, so that no more shall swell than the tree ought to perfect. Look well after grubs; use the syringe freely, and after that rake the earth about at the bottom, that dislodged caterpillars and other insects may not recover themselves and return.

Standard Fruit Trees are not so easily thinned, but they would pay well for the trouble if they underwent the same operation; for all the English orchards which are left to themselves produce inferior fruit to that which they might produce if they had less burthen to bear, less quantity to nourish. To these, when at all infected with caterpillar or grub, the syringe would be well applied, with a moderately formed rose to break the water into a sort of rain, and forcibly applied from beneath, three-fourths of the vermin may be dislodged in a short time, and two or three applications will clear them altogether.

Wall Fruit Trees require close attention, first to rub off and remove with a sharp knife all the useless buds and shoots which grow out away from the wall, and as well as those which, though growing in a right situation, are more numerous than required; because all the growth that you admit to the branches which have to be removed, is taken from those which are to remain, and which of course are the worse for it. If any part of the wall is bare of wood, and any of the outer growing shoots can be bent down, or in, so as to fill it up, they should not be removed.

Vines require, as much as anything, strict attention to the new shoots. Every one that is to grow for next year's fruiting should be encouraged, and fastened loosely to something, that it may not be retarded by its own weight or broken or damaged by the wind; break off all others, or rub them off while very young, As the present year-bearing buds show fruit. let them be supported, and only allow one branch to a shoot, unless the crop be very short, in which case it is an excuse for leaving one more. Fork over the border a few inches deep, and do not put any plants in it if you can help it. A vine border wants all the sun, and except just at the wall, where a few tomatas, or chilies, or capsicums may be grown, nothing should be allowed to deprive the vine roots of heat, moisture, or air. The digging of a border for a crop always damages the upper roots of the vine, and these should never be disturbed on any account.

All Grafted Trees require to be examined, all growths of the stock removed; the clay, if cracked or fallen off, should be replaced with new, unless the union is complete, in which case it may be left. If the bast matting has rotted or broken, it may be as well to tie a fresh one over the place, if it be desirable. Stocks that have been bedded must be examined for the same purpose, the removal of all shoots and branches that may be growing from the stock itself, to throw the entire strength into the bud.

Strawberries must be watered freely in dry weather, not by half quantities and frequent, but by a good soaking all over the ground once in three or four days; hoeing between to loosen the ground a little, and strewing with clean straw between the rows thick enough to prevent evaporation. It is much cleaner than stable litter, and it is a mistaken notion that dung is so essential to the growth of strawberries, or that they are improved much by rich ground. If you want to increase any strawberries as much as possible, pick off the bloom and lay the runners regularly down on the ground, that they may strike; the straw is not wanted to them. If, on the contrary, you want the fruit, take off the runners, and have the straw. There will, for ordinary purposes, generally be as many and as strong runners as are wanted, and, that will grow their chief strength after the fruit is off.

Examine Gooseberries and Currants, to see for grubs, and if there be any, have the ordinary means of extirpation, syringing, lighting wood fires, and burning rubbish on the windward side, so that the smoke may blow all among them, and setting children to pick them off in the event of there being any difficulty about the other means. Always after any of these operations the ground should be raked underneath them, and the grubs that have fallen and been disturbed, picked up.

Raspberries must also be picked over, and the stakes to which they are tied secured in the ground, and the fastenings all made good.

IRON PIPES, AND IRON GENERALLY, IN HORTICULTURAL BUILDINGS.

It has been the opinion of many practical men, that iron robs the air of its oxygen, and experience has shown us that many houses do not, from some cause or other, agree with some plants. Several causes, however, may be assigned; but I may say one thing, I never yet saw an iron built stove, nor a stove that depended for all its heat on iron pipes, grow plants well. I consider that it may be from the fault above described. It may be that so much heated iron deprives the air of its oxygen, and thus spoils it for the healthy respiration of the plants. It is no use to say that there are hundreds of conservatories built of iron, and heated with iron pipes, where the plants do well, because conservatories have a constant supply of fresh air; but the stove, which is closed for hours together, and has no fresh supply of air, is not in the same condition. The plan of the late Mr. Penn, of Greenwich, for admitting air, and keeping it in constant circulation, in a great measure prevented this mishief in iron houses; but I must say, I should like to hear of some iron built house, heated with iron pipes to stove temperature always, in which plants did well long together. I know the evil is to be counteracted in some measure by watering the house and pipes, and generating steam; I know there are many ways of counteracting the evil; I know that Penn's system of heating and admitting air through a chamber of hot pipes, has a beneficial effect; but I have never yet seen, from Ealing Park to Chatsworth, any one iron built house, heated as a stove with iron pipes, which did not make plants worse, rather than better, from the time they are placed in it. This may be a wrong notion, as applied to some things and some houses, but I shall be glad to learn, from any authenticated instances, that I am wrong. I know of many green-houses and conservatories, where plants grow beautifully, though every thing but the glass is iron; but plants might as well be out in the open air, as in such houses, or in such houses as the open air, from the quantity always supplied. Again, I have noticed some of the best and most healthy plants that were ever exhibited grown in stoves with tan or bark pits, and a common flue to heat the house, and I think I could venture to say, that I will, in one of the old-fashioned stoves, built at half, or a third, the price of the modern toy houses, grow a plant with any one who shall possess all the fiddle faddling apparatus and improvement (so called) of the most modern buildings. Some of the finest plants that ever graced the shows at Chiswick have been so grown, and in such houses. But the fact is, gardeners who do this attend to their business; they cannot leave the house for eight or ten hours together, and find their flues warm and comfortable afterwards, like iron pipes communicating with a large boiler, so that in respect to trouble, the iron pipes and hot water have an advantage; but with respect to wholesomeness to the air in which the plant grows, the common flue, and wood work to hold the glass, are every way better. It has been recommended to paint the pipes. This lasts but a short time if not painted with lead, and I am not sure that lead might not be more dangerous in other ways. Upon the whole, iron pipes are decidedly advantageous in all houses but in a stove or heated pit, and may be more advantageously used in a hot pit or stove if the bark or tan pit be used also, to render less pipe necessary; or without tan, if a supply of fresh air and a proper circulation be secured; but, except for neatness, iron is a bad substitute for wood, and the unhealthy state of some of the plants in iron houses sufficiently demonstrate the fact.

PHÆDRANASSA CHLORACRA.

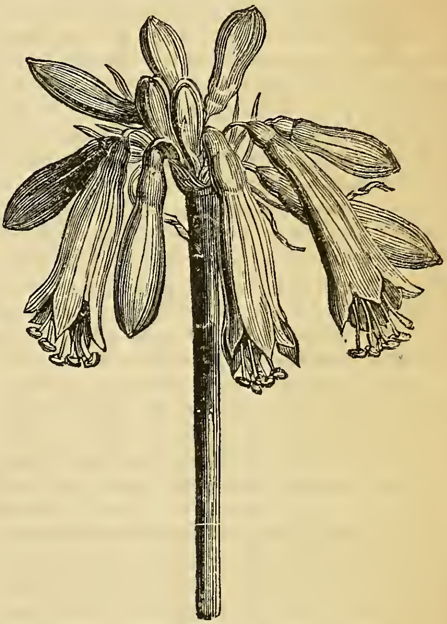
(Herbert.)

THE CRIMSON AND GREEN PHÆDRANASSA.

A Peruvian bulbous plant, found by Mr. Hartweg on rocks at the village of Saraguru, near Loxa, at an elevation of about 9,000 feet above the sea. It has the narrow, comparatively lengthy, leaves so familiarly known to belong to this class of plants. In this case they are connected with the bulb by a short leaf-stalk; beyond this, they are of nearly equal breadth throughout, suddenly contracting at the extremity, and terminating in a blunt point. The flowers are moderately showy, and are produced in a drooping umbel, at the top of an erect stem, rather more than a foot in height: the long narrow tubes hang down from this on all sides; two-thirds of their length they are deep red, or crimson, and the remaining part, at the apex, they are green, and there separate into six blunt-pointed segments. It belongs to Amaryllidaceæ.

This plant was formerly classed as a Phycella, when less perfectly known; but after a more perfect investigation of fresh flowers, Dr. Herbert considers it as a peculiar genus, to which he has given the name of Phædranassa, regarding it as an approach to Stenomesson and Pentlandia. The differences which exist between these plants are chiefly in minute botanical points, which a casual observer would never detect.

The present plant is a green-house bulb, and well worth cultivating where this class of plants is at all prized. Its habit is to flower during the winter and spring months, generally before the leaves spring up; and subsequently, when the blooming time is past, these grow, and perform those elaboratory offices on which, in a great measure, the next year's blooming depends. This consideration points out at once an erroneous practice into which persons are too apt to fall, that of standing bulbous plants aside when their bloom is over, as things requiring no further care, at least for one revolution of the seasons. The proper course to pursue is this:—when the flowers are perished, continue to supply water very liberally, and keep the plants *fully exposed to the light*, in a temperature warmed according to the natural requirements of the plant; that is to say, either provide them with a stove, green-house, or frame temperature, according as they may be stove, green-house, or frame species: continue this treatment till the leaves are fully grown, then gradually decrease the moisture, at the same time maintaining, or even slightly increasing, both light and heat, until the foliage is quite yellow and decayed. If the species submitted to this treatment be at all a free-flowering one, bloom will be certain to follow; but if it is not a free-flowerer this is the most probable course to pursue, and is most likely to ensure success, even with those which are more tardy in producing their blossoms. Keep the bulbs *dry* and *cool* (free from frost) for the next two or three months, which will be their season of rest, or winter, though it may occur perhaps at the end of summer, or in the autumn. On the recurrence of their natural blooming season, they will probably push out a flower-stem; this must be watched for, and as soon as perceived, they must then be submitted to a *progressive increase of heat and*



Phædranassa chloracra.

moisture. If they do not bloom, but show signs of growth, by all means encourage them; and if no action is perceived by a fair and reasonable time in the spring, submit them to the same treatment, and get, if possible, a good crop of leaves, as the most likely precursors of bloom in the following season. The bulbs should be potted in light sandy loam, and the pots, of course, must be well drained.

STANDARD FOR JUDGES.

PROPERTIES OF CUCUMBERS.

There never was, at any period, a more general disposition to judge flowers and plants by some given standard; and, although interested in the consistency of the papers which have appeared on the subject in the Gardener and Practical Florist, we have a great desire to see any improvement that ingenuity and experience can suggest, in any of the standards laid down; because all well-wishers to the science of Floriculture must agree that it is perfectly unimportant whether Mr. A. or Mr. B. has the credit of founding a system: the grand object is, and should be, to get the best standard adopted. For this purpose, we court discussion in all Societies, as to the proper standard to be adopted, and we shall be glad to meet the wishes of anybody who will take upon himself to improve what has been already written; but objections must be founded on principle, and reasons assigned for differing. But Societies ought, without delay, to consider whether any change for the better can be made from that which has been already laid down, and let us have the benefit of their objections; but if not,—if they find that there can be nothing suggested different from the present standard, that would be at the same time an improvement, then the Society should at once announce, as many respectable ones have already done, that their productions shall be judged thereby. If there could be any objections urged, it would lead to discussion, and discussion would lead to a conclusion, which conclusion should be manifest in the Society's rules. It is a curious circumstance, that almost all rules for the judgment of productions made before the set published in the Practical Florist, were indefinite. Take an instance, even, of more modern legislation, if we may call it so. The Ipswich Society put forth a standard, as it was called, for a cucumber; a standard which enabled the showers to put forward specimens (without offending against the rules of taste therein adopted) both ugly and preposterous. What was this standard? "Length." Length the standard of beauty! A more indefinite, mistaken notion was never propounded; a more monstrous fancy never was indulged. Imagine a cucumber six feet long, if it were also equal and straight: these, so far as form was concerned, were beauties; but as unconditional length was and is their standard, a twelve-feet cucumber would beat a six-feet specimen. Thickness? Never thought of. A six-feet cucumber, as thick as one's finger, was to beat a five-feet one as large as one's wrist; for, among the qualifications which accompany this said length, the diameter is never mentioned: no, "length," combined with colour and equality, and various other points—some, by the way, very ridiculous; for instance, as if it were desirable to waste as much of the rind as possible, they require it to be slightly ribbed. Now, what are the points laid down in the standard now universally followed? Length, *nine diameters;* skin, *smooth;* spines, *black,* and *the thicker the better;* colour, *dark green;* bloom, *perfect;* shape, *round; equal the whole length,* except half a diameter for the neck, and half a diameter for the nose; the flower remaining on the fruit, and the fresher the better. These are points which nobody can mistake; the handsomest fruit that has been seen, and thousands have been measured, were nine diameters long; and even the Ipswich Society, which has committed such an error in their unlimited length, without a word about thickness, has actually been betrayed into awarding prizes according to the standard we have quoted, instead of judging by their own. We have conversed with some of these Cucumber gentlemen, and they see and admit it was an oversight, and that nine diameters in length is much more handsome than eight and a half or nine and a half could be, and that brings us pretty close home to correctness. We have only mentioned this circumstance to show that even experienced growers can overlook essential points, which one who makes properties of such things his study does not, and that the sooner we have but one standard the better.

THE GRAFTING OF OLD TREES.

Many people are indiscriminately cutting down old trees, to graft them with new varieties. Now, it is possible to be wrong in this; for one of the first requisites is a healthy stock; and in nine out of ten cases the fruit-tree fails on account of the root, and not on account of the branches. In other words, the cankered branches and blighted fruit, or the failure of fruit altogether, is the result of something wrong below. We do not mean to say that there are not cases of unhealthy varieties in healthy stocks; but this may chiefly be known by the stock itself making vigorous efforts to grow, and being healthy and sound in its appearance. If, as in many orchards is the case, the roots have got into something they do not like, and the usual symptoms of ill-health appear, something besides grafting with a new sort is necessary; and the remedy must be applied at the right place. For instance, on a hot gravelly soil, we happened to see an operation performed very successfully, and the orchard reap the advantage of it in a renovated growth. First, the roots were laid bare, and the large ones were dug between as well as they could be; at a distance of three or four yards, where the roots dipped down into the gravel, the ends were cut off; the top of the surface was thrown into the bottom with some fresh loam, a load to each tree, and a load of the lower stuff removed from the place, when this was all filled in without disturbing the tree. It underwent so vigorous a pruning, that not more than one-third was left, and that only the most healthy wood. In other cases, where the sort itself was bad, they were cut back within a foot or so of the place where the branches start from the trunk, and new sorts were grafted. The reduction of the head was, in both cases, equivalent to the loss at the roots; and even those which were not grafted made excellent young vigorous shoots, which, in time, bore sound, clean fruit. Now, in these cases, the merely cutting back and grafting would have been useless; the diminished demand on the trunk and roots would have enabled the graft to shoot strong; but no sooner would it come into good bearing, than it would partake of the disorder of the trunk, and, like the previous head, be useless. In the other case, it would take years for the roots to get into the gravel again; because the upper soil would be so much more inviting: and there would be every chance of reaping the advantage, that would compensate for all the labour bestowed cn the operation. But, with regard to the grafting of old trees, because the heads were cankered, the operation has been carried to a wonderful extent; and, in many cases, the grafts have grown vigorously for three years, and then been diseased like the branches which they have superseded. Hence, it might be taken for a general rule, that, if a tree is unhealthy, the mischief is at the bottom. That as the roots are in soil that does not agree with them, there is but one remedy for the mischief, which is changing all the soil you can, and cutting off communication with the other. This will prepare the tree for one of two things: either to make new branches of the old sort, or receive grafts for a new head, or, which is often done by those who wish to change sorts, receive grafts on a portion of its branches, and bear fruit on the other, which may be cut away as the grafted portion grows. If, however, a young and healthy tree has a fruit you do not want, graft by all means a sort you do, for it will save time. We ought to have mentioned, and it is not too late, that, in forking down to the roots, to lay them bare, the greatest care should be taken to avoid breaking off the fibres, or bruising any portion of the root; and that every tree ought to be examined, to see there is no tap root under the trunk; for if there be, it must be cut off, or the case abandoned as hopeless. In several cases in the orchard we have mentioned, there were tap roots discovered; and those were, in all cases, the most unhealthy. In most of those instances the tap was severed; in one or two, it was so situated that it could not be got at, and therefore the tree was thrown, and another planted. When you have sufficient grafts, it is well to leave, on the upright trunk, about a foot of each of the forked branches, and, by putting grafts to all of them, the tree will be formed much sooner, as there will be large growth made on different sides of the tree, and, where there happens to be several limbs, a tree is literally made in a season.

WASTE LANDS, AND THEIR RECOVERY.

The draining of swamps has been the means of recovering many thousands of acres, which were, for centuries, indeed as long back as any record could be obtained, perfectly useless: and it is almost the first cry of a superficial observer, when ground lies under water, "Drain it." All this is very easily said; and if you ask the parties so ready with their advice, how the water is to be got rid of, seeing that all the ditches, and even rivers, in the neighbourhood, are as high as the ground to be drained, they would be rather puzzled to carry their advice further. But even this must not discourage us, when we observe what has been done in some cases. It is possible that a large part of land lying always under water, and that water considerably below the bed of the river that runs through it, may be so effectually drained as to be worth cultivating and paying a smart rent for. Let us presume that ten thousand acres of ground, not worth a shilling an acre—not worth anything, in fact, because always under water—be nevertheless in a good situation for farming, if it could be drained. It is clear that, if any means could be contrived to make it workable, it would yield a rent, which we will suppose to be only ten shillings an acre. Any means that would cost annually five shillings an acre would leave a profit of five shillings an acre. Make preparation, therefore, for working a steam-engine at the lowest part, to force up the water to the bed of the river, and keep it always going, if necessary. Now, drain the land as you would if the water run off, bringing all the drains so as to convey the water to the dyke cleared by the engine; and the effect is as complete as if it actually run away, instead of requiring to be forced away by extra power employed on purpose. In this manner have the fens of Lincolnshire been converted from endless sheets of water to excellent wheat lands, yielding, under ordinary culture, four quarters to the acre: so that there really is not any ground, in any situation worth claiming, that might not be claimed by the application of some of the numerous means employed. A windmill has been found equal to the draining of a large swamp, where there were no means of running the water off, the nearest and best watercourse lying more than six feet above the level of the greater part of the swamp. There was an excavation made at the part nearest the outlet, and this was pumped out by means of a very economical windmill, raised sufficiently to catch the wind; and though there were times when the want of wind gave the water a little lenity, it was, for the most part, well kept under and proved a valuable addition to the farm. The draining was of course performed so as to guide the water to the excavation, where it was expelled to the nearest watercourse by the mill. It is not the apparent difficulty that should deter us from attempting improvements, if the object to be attained be worth it; for this must always be the ground-work of all improvements. In the Lincolnshire Fens' improvement, land worth nothing was made worth a considerable sum; and if it cost half the annual rent to keep it drained by means of steam-engines, the other half would be profit; and therefore worth the effort.

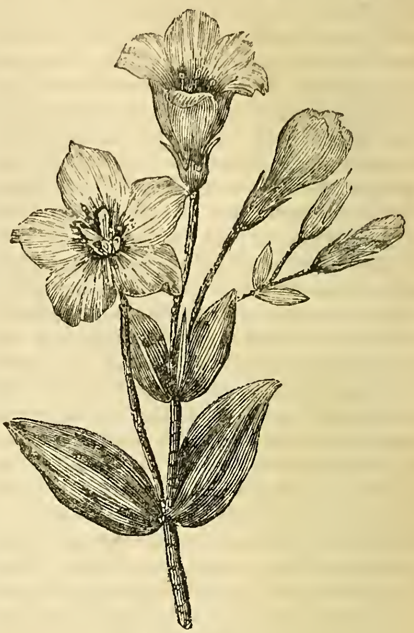
EUSTOMA EXALTATUM.

(Grisebach.)

THE TALL EUSTOMA.

This plant has lately attracted some attention as a new species of Lisianthus, called L. glaucifolius, no doubt owing much of this interest to the well-known beauty of its near ally, Lisianthus (now Eustoma) Russellianus. Instead, however, of being new to the collections of this country, it appears to have been known long ago, and probably in the mean time has been lost, or nearly so. Though much less showy than L. Russellianus, it is a pretty plant, of a simlar habit and general character, but with smaller and less attractive coloured flowers. It belongs to Gentianaceæ.

Eustoma exaltatum forms an upright branching plant, somewhat naked in its appearance, with elliptic-oblong, bluish-looking, (glaucous) leaves, produced in pairs, and situated closely on the stem, opposite each other, and terminating at the apex in a rather sharp point. The flowers are somewhat broadly bell-shaped, divided at the edge into five obtuse segments, of a pretty lilac colour, deeper about the eye, and about half the size of E. Russellianus. It is a biennial plant, requiring to be sown towards the end of the summer, in order to bloom during the following one. It grows best in a light soil of which sandy peat is the chief component; and, in order to correct its somewhat lax and naked habit, the young plants should be frequently and freely "stopped;" that is, they should have the tops of the shoots taken out as soon as they have formed two or three leaves long, and this should be continued till later or earlier in the spring, according to the time the plants are required in bloom, and the degree of bushiness which it is desired to impart to them. It requires a green-house temperature, somewhat above the average.



Eustoma exaltatum.

The Pacific coast of Mexico, Vera Cruz, Cuba, Tampico, St. Domingo, the Havannah, and the Arkansas, are all said to produce it; but probably some of these stations belong to a different species.

THE PETUNIA.

This extraordinary plant, which, but a short time ago, was a mere border flower, has, by the perseverance of the spirited growers, who have been moved by the publication of its properties, become a most striking garden ornament, and a show flower. During the past season, Mr. Girling, of Stowmarket, showed, on several occasions, collections of the most beautifully striped varieties, enough to tempt any one who had room for a collection to begin growing them; and some of the varieties were, in every respect, up to the desirable standard, or, at least, nearly to it. At the Botanical Gardens, there were many exhibited by Mr. Sorrel, of Chelmsford, one or two varieties of the largest conceivable size, and one of them of a texture more like purple morocco leather than anything else, with all the roughness of the grain so conspicuous in that article. These advances, be it remembered, were made, as it were, in one, or, at most, two seasons; and where the advance, as regards colour, is to stop, we know not. Every buyer of any of these remarkable varieties will, in all probability, save seed, and produce new combinations, because no plant requires less trouble in cultivation, whether grown in pots or turned out in beds and borders; but we should recommend all young beginners to turn their new plants into borders at the end of May. Let the border have some vegetable mould forked into it, and if the soil be very tenacious, a little peat earth, to lighten it. They should be turned out of the pots with the balls of earth whole, so as not to disturb the roots, and have a little water to close the earth about them. As soon as they shoot a little, either pinch the top off, or take off the top two joints with it, and strike it under a hand glass, if with a little bottom heat so much the better. These will form a succession of plants to put out; but as the plants of new varieties are mostly small, and will, doubtless, be so in this case, it may be desirable to pinch out the top at once, to get a stronger and more early development of side shoots. If any of these side shoots grow longer than the rest on the plant, take the top out. The dwarf kinds will run over the bed, and bloom well; but the tall ones must have support, and the best kind is short branches of trees and shrubs, which they will completely cover. Here let them have water in dry weather, soaked well in all over the bed, foliage as well as roots; and the best time for this is as soon as the sun is down, or off them, in the evening, or, at least, when the heat of the day is over. Here they will flower and throw out side shoots, that may be shortened to make cuttings of. To strike these, it is necessary to cut the stem up to a joint; remove the bottom leaves of it, and stick them into a pot, to be covered with a bell glass. If you can plunge the pot into slight bottom heat, it will facilitate the striking, though they will do well enough without any further trouble than placing them in a frame, shading the individual bell glass with thin paper, wiping the damp from the glass inside daily, and keeping the soil moist. When rooted, they may be planted out to bloom, or potted for storing. The early flowering ones, that is, those planted in May, will seed freely, and the production of the seed may be new sorts, exceeding in beauty and variety the plants from which they are saved. In the spring, sow the seed in boxes or pans, and they will come up in a cold frame. When they germinate, they must be freely watered, and, as soon as they are large enough, they may be potted, one each, in large sixty-sized pots. Place them out of doors, on some hard ground, through which the worms cannot penetrate, to get into the pots, and taking especial care that they are never dry; they will grow well until the time for placing them in winter quarters; and at that time the old plants must be potted up from the borders, or otherwise protected; for they will not stand the winter. In the frame, all winter time, they will want but little water. They cannot be too dry, so that they do not actually flag for want of moisture. Pick off dead leaves all through the period of their confinement in the frames; for they would cause damp, and sometimes rot. The old plants may be cut down pretty close, and the cuttings be struck; for, during the winter, they need only be stuck into pots, several in each, all round the edges, and kept from getting dry; they will strike, in all probability, before the time for bedding out, or potting off: and thus, the purchaser of a dozen good ones this spring may have a first-rate stock,—first, by striking all the varieties he buys; secondly, by the saving of

The Petunia.

seed from them, and raising seedlings; by which means he will procure new varieties, perhaps, in advance of his neighbours.

EFFECT OF RAPID, SLOW, OR MEDIUM GROWTH.

There is a vast difference between the productions of the garden, according to the mode of treating them, the size of every thing always affecting its flavour. The first consideration, therefore, is, do you want strength of flavour, or otherwise? Generally speaking, we want vegetables to be mild, therefore they cannot be grown too large. Generally speaking, again, we require fruit to be highly flavoured, and therefore they can be grown too large. Had not the eye as well as the palate to be pleased, we should never care to have fruit of any kind beyond an ordinary size; but in vegetables the more rapid the growth the better. Cabbages, onions, radishes, spinach, cauliflowers, brocoli, &c. are praised for mildness, and condemned when they are of strong flavour; the former is always the result of rapid, free growth, the latter of a stunted growth. A cucumber is milder, celery is milder, even horse-radish, stringent as it is, is very much milder, when grown rapidly, than when its growth is slow. The Spanish and Portuguese onion is mild compared with ours, because its growth is free and rapid. The Spanish onion seed grown here is never so mild, because it is longer making its growth, and less when it is grown. Fruit has its season of growth, like anything else, and the skill of the gardener is used to grow it large. The excellence of fruit is—stupidly enough—to be decided by its size in almost all cases, when in nine cases out of ten, nay, ninety-nine cases of a hundred, it loses flavour in proportion to its beauty. No one can complain, in a general way, of the want of flavour in a grape such as we see at shows. It would be affectation, to say that a splendid large Muscat of Alexandria was, when well ripened, short of quality; but by comparison, that is to say, by the side of one that had been the whole season growing only half the size, it would be found weaker and less rich. Nobody will venture to say that a five-pound Queen Pine is so good as one of two or three, grown in the same time. Nobody will venture to show for flavour a melon of excessive growth against one of moderate growth of the same sort. The Jersey Charmontelle Pears are handsome fruit, as compared with the English grown, and bring more money, but they are no more to be compared for flavour than a turnip with an orange. We do not complain of people's taste; we are simply stating facts, and showing, that according to what you want, so ought you to provide. If we wanted currants for wine, we should not look for fine fruit: small currants are more highly flavoured. Let a red Warrington gooseberry grow of its ordinary garden size, and the flavour is exquisite; grow it as large as you can for show, and it is absolutely washy in comparison. Let there be found on a pear tree,—say one on a wall, for which all things requisite have been done,—let there be found an ill-formed fruit, one that has been stunted, and eat that, and compare it with one of the finest, and you will at once see that the stunting, or the slow growth, and the high flavour go together. But we must not confound this subject by considering all large fruit are of inferior flavour, but that large fruit of a particular kind are worse flavoured than ordinary sized ones of the same kind, that is, weaker flavoured, which in fruit is always an objection, but in vegetables an excellence. In vegetables, the younger they are the better they are; but this is only in cases where the growth is checked as it grows old. A summer cabbage is always mild, but it will continue mild as long as the growth is not checked; so that, until it gets hard in the heart, and thereby checked in its growth, it will eat well. Thus is it that a white, close cabbage, as hard as it can well be, will be rich and fine when properly cooked; but if allowed to remain on the ground in that state, or be a few days cut, it becomes in either case rank and strong. Turnips sown at a good season grow quickly, and taken while in growth will be fine; but the same seed, sown in a dry season, advance but slowly, and eat strong, and if left a little longer on the ground they become woody and stringy, as well as hot and strong. We might run through the whole list of fruits and vegetables, and prove these facts in each and every case; but we have been content to mention those which our readers must be familiar with, because facts brought home to one's mind bring conviction. Of those proofs, connected with vegetables, enough has been said; but perhaps, as regards fruit, people are not so easily convinced, because, excepting those who can taste under the same circumstances, none can judge well. If we take a well-ripened bunch of grapes, and find among the berries some small ones as fully ripe, they are always of finer flavour. If an orange tree happens to have, as those who grow them must have seen, two or three very much smaller than the general crop, they will be found richer, that is, stronger in flavour. Take a middle-sized strawberry of any sort, grown on poor soil, and the large ones grown on rich soil, and the smaller ones will be the sweetest and best; not but the starving system may be carried too far; indeed, if the vine be starved too much, it will not ripen its fruit; but even the vine may be grown upon the hot gravelly or chalky soil, where the fruit will not come half so large, but that fruit, nevertheless, of the highest possible quality. Let the pine grower, who finds a deformed, stunted, unmarketable fruit, and eats it at home, say if he, once in a hundred times, ate a well-grown specimen so fine and rich in flavour. We remember to have eaten at Richmond, at a dinner of, we believe, gardeners, portions of some of the most beautifully-grown pine-apples that perhaps were ever put on table, and we hesitate not to say they were the worst and poorest in flavour that we ever tasted; and this only last year. We have also tasted several times the heavy Providence Pines; but we well remember putting a stunted Providence Pine (for one which weighed under two pounds might well be so called) before several pine growers, and as the crown was pulled out, and the stalk cut close before it was put down, and thus the only evidence of the variety removed, it was pronounced to be a splendid flavour, equal to anything they knew, nor were they easily persuaded it was a Providence until the plant it came from and the crown were shown as proofs. The difficulty of persuading people that large fruit is worse than small, arises from the fact, that larger kinds of fruit are raised constantly, and many of them really improvements on old varieties, and this makes people familiar with large fruit, that supersedes altogether many of the inferior and older kinds, so that we are met by prejudices against small fruit; but we cannot too strongly impress upon the mind, that to be a judge, the fruit to be compared must be the same variety. Take a Moor Park Apricot, which may be grown larger than any other kind that we are acquainted with. On the same tree that in some parts grows this fine fruit, may be occasionally found some deeply-coloured, stunted fruit, speckled as if blighted. These are invariably of splendid flavour. So much for the general principle that we have laid down. The blighted, stunted, misshaped fruits have been as long growing as the finer and larger ones, thus establishing the principle, or rather confirming the truth of the principle, laid down, that rapid growth reduces the flavour, and that the loss of the essential flavour is an evil in fruit, but a good in vegetables, because in one thing all will agree,—there is but one opinion upon the fact,—that mild turnips, mild radishes, mild cabbage, mild everything in the list of culinary vegetables, must be the best. This, then, ought to be always thought of when you are growing things. The gardeners who exhibit for flavour, should never choose the largest fruit. The Horticultural Society has always given prizes for size, and this has led, not only to extravagant growth, but also to the cultivation of large and poor sorts of fruit, instead of those more distinguished for flavour than beauty. At country exhibitions, where everything is judged by flavour, the best effects are produced. We should like to see this more attended to in the metropolis; and there never was a better opportunity for the promotion of good flavour in fruit than the establishment of the Royal Metropolitan Society of Horticulturists affords.

THE NEW FLOWERS OF THE SEASON.

If we look to the advance made last season in many flowers, it is highly gratifying, and to read some of the descriptions and the quantity of the novelties offered, there is a fearful prospect for the amateur with limited means: hundreds of subjects, we are sorry to say, are offered where there ought not to be a score; and be it remembered, that money laid out in plants by description of their raisers is, for the most part, lost; for there are certain points on which there is no more dependence than on a rope of sand. For instance, the words, "excellent form," "fine form," "good show-flower," all of which distinctions depend on the taste of the raiser, or, at any rate, the person who describes, must go literally for nothing, unless backed by some competent authority; and none but those who can keep the model of a perfect flower in their "mind's eye" can be depended on—nay, can depend on themselves. The very best meaning men have confidently recommended things as of "fine form," when they have been exceedingly faulty in that respect; and what has this disappointment led to? Why, to the best-meaning men distrusting themselves, and submitting whatever they think is really good, and worth the trouble, to the opinion of others, whose opinions they quote, rather than describe a thing themselves. Now, amidst such awful lists of beauties as are recommended by the very numerous dealers who are soliciting orders, how is it possible any man who has seen nothing can select? He wants in Petunias, Verbenas, Dahlias, or Fuchsias, say twelve or six of the best. To which must he look? If we believe the describer, they are all good, all "fine forms," all "excellent show-flowers." The very thought confuses everybody, and the mischief is, that, being unable to select with any certainty, they leave it altogether for a season, and content themselves with buying them the next, after seeing them in bloom. This determination on the part of buyers is a great loss to the owners of new flowers, because, independently of the price being very much less, the orders are divided among the trade, instead of coming to the original vendor. Although we cannot for an instant recommend an amateur to buy without some accredited opinion is added to that of the vendor, we can see quite enough for any moderate grower, advertised with such opinions as may be depended on, if genuine ; that is, if the words of the parties are given ; and without venturing to approve of one in ten of the varieties of Fuchsia advertised, it cannot be too earnestly impressed on the mind of the buyer, that if he can only get hold of half-a-dozen well-authenticated improvements on our present varieties, he can well afford to miss a dozen good ones among the hundred he cannot afford to buy. In this advice to the amateurs of gardening we have two objects, both of them we trust important and useful. The one is, to direct attention to such plants and flowers as are offered by nurserymen who have not relied altogether on their own opinions, but have submitted to a somewhat severe test, for the security of the Floral world ; because we think any subject which has been pronounced by a competent authority to be worthy of patronage, ought to be extensively purchased, to encourage the raisers of flowers when they do succeed, and to promote the practice of submitting flowers to competent authorities. The second object is, to save amateurs from the mortification of finding among their purchases many things not worth the room they take. Besides, we have seen it somewhere in print, that no less than seven hundred subjects were submitted to one person for his opinion, and that all adverse opinions were unpublished, while the few favourable opinions bestowed on the novelties were made the most of. Now, it is only a fair supposition, that those numerous varieties which are offered by all classes of dealers without any accredited opinion on their merits are the rejected varieties; or that the owners, knowing or believing they would not pass the ordeal, declined to submit them at all. In either of these cases, they cannot be worth the risk of buying by an amateur, because he cannot, however large his establishment, desire to fill it up with secondary matters. Nobody likes to find among his collected beauties subjects of less than average value. It is a plain and incontrovertible fact, that unless a man studies the subject very closely, he does not know how to estimate a new flower. Not only have the most respectable nurserymen in the kingdom been totally mistaken in their own judgment, but when some of the leading men formed themselves into a Society to decide upon what was worthy, and what was not worthy, to be let out as new flowers, the whole body was mistaken in a great majority of cases, and failed altogether in their object. This speaks volumes in behalf of the most severe test being applied ; and there are several nurserymen of high repute who hesitate not to act upon this plan. Such has been the case with many subjects that will be let out this spring. Petunias, Verbenas, Fuchsias, Dahlias, and other flowers, may be found in the catalogues, with quotations from the opinions pronounced upon their merits ; and it is one consolation to the Floral world, that there are enough of these flowers so authenticated to meet the wants of all moderate growers, without running the risk of ordering a single variety which has not such recommendation, and which may, for the most part, be, for aught we know, some of the hundreds rejected ; not because they were bad, perhaps, but because they were not improvements upon what we had already, and not sufficiently novel to be worth adding to our collections. It is perhaps worth mentioning, incidentally, that several nurserymen have made a rule of submitting their plants to two different judges, and that many have been condemned by one judge, and praised, or flatteringly described, by the other. Experience in the purchase of such things, last season, has made us bitterly repent our confidence in these one-sided characters. A lot of plants from one of the Eastern counties, recommended strongly by an authority in which a revered friend of ours had the highest confidence, proved a total loss ; not a solitary one proved worth retaining, although the whole had been held up as being of the highest order. We do not attribute the mistaken opinions publicly given to any improper motive ; but they proved altogether fallacious, and caused a sad loss to us, and to those amateurs to whom we sold them by the descriptions that were published. It becomes, therefore, a duty we owe ourselves, and the amateurs generally, to say, in a few words, to what conclusions we have come, after considering all these matters calmly and dispassionately, and they may be safely acted upon by the amateurs throughout the country.

First.—That an amateur cannot, under any circumstances, want one-fourth, even if he want one-tenth of the numerous flowers to be let out this spring.

Secondly.—That, to suit himself as to number, he need not have one which is advertised without an accredited warranty as to its worthiness to be added to our collections.

Thirdly.—That if he buy any of those which have not been advertised with a sound accredited opinion of their quality and properties, he runs the risk of buying the actual varieties which the best authority on the properties of flowers has rejected as unworthy to be let out.

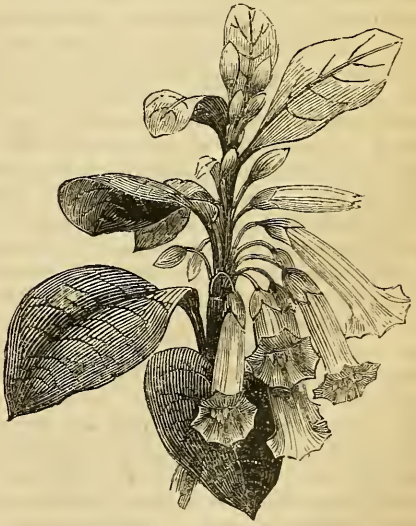
Fourthly.—By purchasing any of those flowers which have not been submitted, or which being submitted to competent authority, have been quietly rejected, they will encourage persons to rely on, or to use, opinions not valued by florists, or to refuse to submit to any test, and thus keep up the system of uncertainty and deception which has been the bane of Floriculture.

The same observation that we have used with regard to Verbenas, Fuchsias, Petunias, and Dahlias, applies to Geraniums, Auriculas, Carnations, Pinks, Piccotees, Polyanthuses, Roses, and all other plants and flowers ; and the unwillingness of the dealers to submit some of these productions to the test which has done so much for others, is the sole cause of the limited number sold, and the backward state of the fancy in these particular flowers. Take, for example, the Geranium. People in all parts of the country complain that they can get no information as to which are the best varieties. They buy by the catalogue, and suffer deeply for their temerity. They buy according to the prizes given at some of the shows, and they are disappointed. Were it otherwise, there would be twenty growers where there is one now. We do not mean growers in the ordinary way, because every body grows a few; but growers for exhibition, growers who would make it their hobby, and lay out large sums. All we can advise in this matter is, that the amateur buy nothing except from his own judgment in bloom, until the growers submit, like the cultivators of other flowers, to something like an authenticated opinion. The idea of throwing away guineas upon a novelty which is often worse than we already have, is not only ridiculous, but mortifying ; whereas, if the certainty of improvement attached to the purchase, it would be tolerable. No amateur should touch a Geranium the first year it is let out, unless he knows it to be worth his money. The trade may, and must, buy it to sell again: they keep collections, not selections; and a bad show-flower will fetch the common price to which it is reduced in one season as well as a good one, if there is anything remarkable in the colour. So long, therefore, as Geranium growers will rely upon their own recommendation, so long will their first year's sales of new ones be very limited. When they think it worth while to quote authentic opinions, the amateur will gain spirit, and buy early. The other flowers are mostly submitted now to a proper test. Dickson's new Auriculas were popular on that account. Several Pinks, Piccotees, and Carnations, have, through the favourable opinions bestowed on them by authentic judges, so increased in estimation, that, although by no means tender or remarkable as to propagation, they cannot be supplied. Polyanthuses (in their infancy round London) are to be brought into popularity in a single season, if the raisers will take the proper steps to let them be known ; and in proportion as the raisers are open and confident, so will any flower, we care not what it be, advance in public estimation. Amateurs, therefore, will be doing essential service to Floriculture by purchasing freely all well-authenticated improvements on our present flowers, to encourage the plan of submitting to such test. They will secure themselves against imposition by not buying any which have not been so authenticated until they see them in flower. And with this advice, which will save hundreds of pounds, we close the present article.

LYCIUM FUCHSIOIDES.

THE FUCHSIA-LIKE LYCIUM.

This truly noble plant, an evergreen shrub, from the Andes, is worthy of a place in every choice collection. It has flowered at Kew, and been handsomely figured in the Botanical Magazine. The foliage is handsome, and the flowers are of rich orange scarlet, and very abundant. The Lyciums are a numerous family, but perhaps none so rich as this variety. Most of those in cultivation in this country are hardy or green-house plants, and natives of China, Barbary, Carolina, the South of Europe, the Cape of Good Hope, and Siberia. The greater part of them bear violet, blue, or purple flowers, to which this is a great contrast. As cultivated at Kew, it is a shrub five feet high, and in good health.



Lycium Fuchsioides.

This species, or variety, grows well in a stove, and thrives under ordinary culture, but will bear much more hardy treatment. It is said to have been raised from seed, and forwarded by Dr. Jamieson from the Quitinian Andes. The hardy kinds are adapted for training against trellis work, fronts of houses, walls, arbours, &c.; and all of them strike freely from cuttings in sand, and under a bell glass.

THE CULTIVATION OF BALSAM,

UPON THE ONE-SHIFT SYSTEM OF POTTING.

As I have heard a good deal said, and seen a good deal written, about the one-shift system, I should like to place the question in a proper light, and not let a good thing be confounded with a bad use of it. Now I maintain that, where you have room for it, the one-shift system is good for Balsams; and I grow a few upon that plan, though it is impossible in any limited space to grow many. I sow my seed in February, perhaps not more than a score seeds, and of course of the best kind I can hear of or procure. A thirty-two sized pot will hold these, and, the moment they are up, I keep them close to the light, to prevent their drawing, which, according to my experience, is never got over; because you never can make a plant that has been drawn in the seed-pot, so handsome as one that has not. When these few plants have four leaves, I procure number twelve pots enough to fill a two-light box, which I make up with dung-heat, and the wood-work of my frame is twelve inches in front and eighteen behind. In the centre of these pots I put two plants, with a bit of slate between them to prevent their roots from matting into one another. These pots I place in the frame, which is put on four inches of soil above the dung. This enables me to sink the front row or two a little, and so keep the plant a very small distance from the glass; and by propping the back ones I contrive to have them all the same distance. I give all the air I possibly can, consistently with the heat required; and I cover them with transparent water-proof cloth, which I find keeps in a good deal more heat than much thicker stuff does when not water-proof. The object of this covering, too, is, that the plants shall never be in the dark. It also enables me to leave an opening for the escape of steam and excessive heat, which I do with a few round holes near the top of the back part, with plugs in them, which I can remove, and in the daytime frequently remove one or more, in preference to lifting the glass. Again, I invariably shade them from the broiling sun, which is frequently very powerful in the early spring months; this I do also with the transparent water-proof cloth, which I fancy repels the violent heat without reducing the light. Of course the growth is very rapid, and the pots have to be lowered, or the frame raised, very frequently. As they advance, I have to raise the box by putting bricks under it, and building up to it with thickly cut turfs, which form a nine or twelve-inch wall. The only safe way to do this, is to place the turfs close to the box, all round it; so closely as to admit no air, and say a foot high; then choose the warmest part of the day, get one man to hold up the glass as high as he can, while you pull up the front of the box, and put one or two bricks under in two places. Then go to the light, and slide it down enough to enable your assistants to raise up the back, and you to place bricks there;—the turf must be well closed upon the wood of the box, so as to leave no vacancy for air;—and thus must you continue to raise the glass, until you remove them altogether into the house in which you intend to complete them. I found that they grew very much larger than any of those which I grew in the ordinary way; and more than once even the large pots were matted. But I ought, perhaps, in its proper place, to have mentioned what I did about having two plants in a pot. I look a good deal to habit; and as soon as I could see which of the two plants was likely to be the better, I removed the other. If I wanted plants, I used them by potting them directly; if I did not, I threw them or gave them away; but there is a good deal in having a choice of two plants when only one is required. Twenty reasons might make us prefer one to another, and I never omit it now, because they can be put so close as to be not sufficiently out of the centre to be ugly; and the piece of slate between them enables you to draw out the one not wanted, without destroying a fibre of the other or of itself, and refilling the space with proper soil. I have had them by July so large, that, except at Mr. Cock's, of Chiswick, I never saw any approach them, and mine were not so much drawn; but I believe that, had I begun with four-sized pots instead of eight, the plants would have been much larger and finer. I judge so, because they were matted in the large pots as hard as you ever see the roots in small ones. I used liquid manure when they were coming into bloom; but, as this was perfectly a speculation, and I did not keep any upon plain watering, I cannot say what the effect was; I have, therefore, proved that the one-shift system is good when a large rank growth is required, and there is a limited period to the existence of a plant. Schizanthus would be an excellent plant to test in this way, but if the plant, like a Balsam, is capable of being grown to fill a bushel-pot in one season, the job of growing up a few of these specimens would be enormous. I have mentioned the Balsam as a plant to be grown on the one-shift system, not so much in advocacy of the principle, as in corroboration of its possibility; not so much by way of recommending it, as showing that it can be done, and how to do it. While, therefore, some people gravely assure us that the one-shift system is the best for everything, and others are denouncing it as an impracticable, impossible thing, I desire to say that the Balsam grows larger and in less time than it will grow in the ordinary way; the only drawback is its coarseness as a plant; the flowers are individually noble, but they do not form such a mass as those on a smaller plant. They are more distant apart in mine than I had seen two seasons before in those I grew in the ordinary way, but each individual flower was magnificent, and I never saw a prettier sight than a tray of them laid on moss; for, besides showing different varieties from the different plants, the variegated plants had a dozen different flowers on each; some very little spotted or striped, some half coloured and half white, some nearly all white, and in the different proportions between them. I am not sure that I shall grow them on this one-shift principle again; but it has taught me, that I ought to go from the seed-pot to a forty-eight, from a forty-eight to a sixteen, and from the sixteen to the one I finish the bloom in; and I believe this is what we shall all come to. I object to slight changes, but perhaps only one potting is carrying things to an injudicious extreme, if only for the enormous room it takes.—*P. P.*

SLATE FOR HORTICULTURAL PURPOSES.

Much has been said in favour of this material for boxes, as substitutes for pots and tubs; among other recommendations, economy of space and money are the chief, and upon these grounds, the advocates show something in their favour; but against these, we have simply to observe, that the saving of expense is very small, if the interest of money expended is considered, and as to space, we must dissent altogether; while there are disadvantages which we cannot overlook, and among them weight is no small one. The grand secret spring which has made the movement in behalf of slate, is the perseverance with which the manufacturers of the article have pushed the sale by liberal advertising, and the readiness with which portions of the press second anything that brings "grist to the mill." The expense in the first instance is much greater than that of either pots or tubs, and we are not quite sure that a square receptacle for roots which spread all round alike, can be defended seriously as appropriate. It is true that squares fit better in stowage than circles; but, until it can be shown that the corners added to a circle are advantageous, the packing or stowing part of the affair falls to the ground, while the additional weight of the slate, and of the soil which fills the corners of a square, are manifest evils. With regard to a square being neater than a circle, we must admit, whether we will or not, that if any one says he likes a square better than a circle, he may insist that it is neater, and better; but doubt very much whether, beyond the interested parties, and those who desire to serve them, the preference will be found to exist. We are prepared to hear that imported orange and lemon trees are mostly in square wooden boxes, and therefore that squares were not invented for the benefit of slate quarries; but it must be remembered that stowage on board ships, which are tossed about in all directions, is an excuse for that form. It must, however, be remembered, that nobody keeps them longer in those boxes than they can help, and that they are soon transferred from those to something more ornamental. There is something a good deal too mechanical in the form of a square, and even when, for the sake of economy, boxes instead of tubs are used, they are made, for the most part, smaller at the bottom, and very different from the straight-sided things formed of slate. But, if it be said that square is better than round, and that it is desirable to lug about all the extra weight of the additional soil to fill the corners,—which, be it remembered, the roots do not fill till they meet against the sides,—and which we deny, then we are reduced to the simple question of economy; for no one will venture to say that wood cannot be worked as neatly as slate can be. And then we have not the objection of weight, and the awkwardness of handling. With regard to the economy, there is the disadvantage of large additional present outlay, and the consolation merely, that if no unlucky wight breaks it in the course of removing, or otherwise using, it will last out several wooden boxes. We have inspected the slate boxes, and, indeed, seen them in use in many places, as well as at shows,—and great merit is taken by some writers for the plan upon which they are made,—this plan, however, being nothing more nor less than standing upon four feet, which the wooden boxes have done for the last half century, to our knowledge, and, for aught we know, for half-a-dozen. Of the slate boxes, it is said:—"The bottom being thus raised from the ground, is obviously favourable to drainage, and a means of deterring snails and worms from entering through the holes, and these advantages are increased, and a circulation of air at the roots of the plants promoted, by the box standing on four small castors screwed to the bottom, which also facilitate their removal from place to place. The sides are also provided with small inverted iron hooks, so that with the aid of two shafts, cut of a convenient size and form, (like the shafts of a common hand-barrow,) and with an iron loop in the middle, to fix them to the hooks, they may be shifted to a distance with the utmost ease." Now, there is not one word in all this that does not apply with equal propriety to wooden ones of old date, whereas you are tied to the square form with slate, whether you prefer squares or not; although, from the manner in which the plan is praised, one would be led to infer there was some novelty in it. We do not complain of those who are interested, doing the best they can to recommend the article; but we would not have young plant-growers misled with any fallacious accounts of its superiority. The durability is the only solitary point in their favour, that is to say, if no accident happens to break them ; but when we consider the great number of years that yellow deal, pitched inside, will last, and the great affinity which there appears between that article and the roots of the plants, there can be little said in behalf of the more durable material to compensate for its fragile nature, the additional weight, the necessity for having them square, and the absolute evil of requiring more soil to fill a square, than a circle of the same diameter. There are gardeners who dispute the alleged fact, that slate is as good a material for the roots as ordinary pots or wood. This is carrying the objection further than is fair, though the production of healthy plants in slate boxes is no proof to the contrary until they are filled with roots, which has not been the case with any that we have seen ; still, we cannot agree with those who assert its inferiority without some positive proof. Those who maintain that glazed pots are not so good as unglazed have more ground for their objections. We have simply given our reasons for objecting to slate boxes, and they are founded on rational grounds. We object to square vessels of any kind for roots;—we object to additional, useless soil, and additional weight of the box;—we object to the fragile nature of the slate as compared with wood; and the larger the boxes the greater are all these objections; but as to the effect of the material itself, we do not participate with those who assert its inferiority. There is, as we said before, no novelty in the plan, of which so much is made; for the advantages so praised have been secured in wooden boxes long before our time, and, so far as we have been enabled to judge from documents, more than a century.

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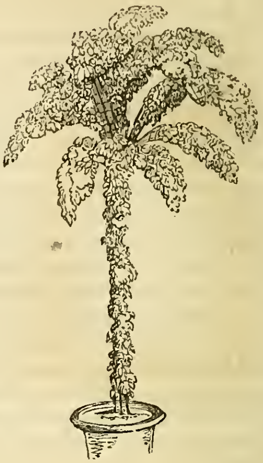
TRELLISES FOR TRAINING PLANTS.



We have already said a little upon this subject; but, the more we look on the present unnatural-looking shields for our climbing plants, the greater appears the necessity of an alteration. Whatever is unnatural in plant-growing must have some great advantages to enable us to tolerate it at all. This may be said against plants growing in pots instead of the ground; for nothing but the necessity of doing so justifies it. Plants must be moved about, and therefore something to grow in is necessary, and that something is a pot, or tub, or some receptacle for the soil they require; but, in all cases, the nearer we can approach to familiar objects in our mode of training the better. There can hardly be a better guide than nature in all this. Where do we find climbing plants? Twining up and round pillars, insinuating themselves into all the crevices of a ruin, festooning the Gothic arch and the glassless window, enfolding the aged tree, and clinging to the ancient gateway. All these things can, more or less, be imitated. A pillar, whether broken or perfect, is not only an appropriate, but a handsome design for a climbing plant. An ancient arched window is well adapted for one of the larger kind of plants; and there is one great advantage in such subjects, if made well—they look the better for not being entirely covered. In the treatment of climbing plants, there is considerable attention required to the early shoots, and especially with those designs which would be deteriorated by the wandering of the shoots. For instance, suppose the design be an old decayed tree, with the remains of five or six branches that have been broken off, the greatest care is required to prevent any shoot from going like a line from one part to another. For this reason, you must let a shoot fill the branch, and return again down it, before it is made to fill another, otherwise the cross line would spoil the design altogether; but, generally speaking, the main shoot may be made to fill the trunk of the tree, and then, by stopping it, side shoots enough to fill each its own branch will be developed, and in all cases the bottom of a design must be well filled before the plant is allowed to go up at all. We have here given a few sketches of plants fit for pots upon a small scale, and a conservatory upon a large scale, or for the open garden, and we hope that wire-workers will fall into our views, and provide fancy subjects, of different kinds, to supersede those senseless and ugly, because unnatural, things, which are not only degrading to the plant, but discreditable to the taste of the owner. We never think of the great round balls, and the flat, large dish-like shields, which are produced at our modern exhibitions, without being vexed at the absence of all sound imitation or invention on the part of those who made them, and the want of taste in those who adopted them; and all the fanciful things we have yet seen seem worse instead of better; things made to look at before use, not as if they were to be covered with a plant. Some have even gone so far as to make a wire-work coat of arms; and others have grown climbers upon them, without a single thought of the botch it would make when the wire was covered: nobody could tell, and few would have guessed, what it had been meant for. Here was exhibited an instance of allowing the plant to go its own way; for it had climbed from the lion's tail to his mane, and from the unicorn's head to the cross on the crown; in short, it was a shapeless mass, and even had it not been so, it would have been a failure; therefore we say, choose your subject well, and, if possible, such a subject as shall look well when it is only half covered, and from that time till it is complete; this done, see that it be not spoiled by the wandering of the plant, from the outline of the device, for this is very necessary in all cases, and in some subjects, inattention to this important point would produce a total failure.

ANIMALS AND VEGETABLES.*

The modern critics on Natural History and Botany, and, perhaps, bookmakers generally, are too apt to rely on great names; and, after appropriating their ideas, and dressing them in new apparel, put them forth as something worthy of the public approbation, by triumphantly appealing to those great names whom they have followed as authorities, to prove the value of their newly-created volumes. Not so, however, does Professor Rymer Jones, whose "Natural History of Animals" is now before us; a work deserving the highest commendation; full of originality and instruction; evincing laborious research, deep study, and intense thought. Such a contrast is it to some of the manufactured volumes and papers of recent years, as to astonish the most profound reader, in proportion to the quantity of other matter he has waded through. The author refers to "great names," it is true; but it is to show, in the plainest way possible, that "great names" mislead the inexperienced, and that it is worse than folly to attempt to reconcile the absurdities of ages, because they were put forth by eminent writers, instead of investigating and thinking for ourselves. Mr. Rymer Jones, in writing his "History of Animals," which, we are informed, was the substance of three courses of lectures at the Royal Institution, has begun at the beginning. Much has been said and written upon the subject of the precise line where the animal kingdom begins and the vegetable ends, and by great men too. The great Linnæus, as our author reminds us, has written, "'Stones grow, vegetables grow and live, animals grow, live, and feel': to be capable of feeling, therefore, was the characteristic chosen by this great naturalist, whereby to distinguish an animal from any other organized substance. But, alas ! we shall soon find, as we contemplate the humblest forms that are now admitted into the animal creation, an entire absence of this character ; as far, at least, as we have the means of judging. How are we to prove, for instance, that sponges, while in their living state, possess sensation ? You may tear them, cut them, bore them with a red-hot iron, attack them with chemical stimuli of any kind ; yet, lacerate and torture them as you will, they will never shrink under the inquisition, or confess, by the slightest tremor, that they are possessed of feeling, or capable of sensation. On the other side, look at the vegetable kingdom. See we not that many plants appear to feel the solar influence, turning their flowers to the beam of the sun, or directing the fibrils of their roots in search of nourishment ? Does not the sensitive plant shrink at the slightest contact ? If we are to judge of the possession of the power of feeling from the movements caused by external impressions, there are members of the vegetable world that have far more claim to the title of animals than many of the humbler creatures now unhesitatingly classed by the Zoologist as belonging to his department of the creation." In this way does our author reason ; while half the theories of his predecessors are tumbled about like so many skittles, though they are not quite so easily set up again. For instance, the foregoing distinctions between stones, vegetables, and animals, has been broached with as much confidence by some modern philosophers as if all that Linnæus ever wrote was truth. Yet Mr. Jones overturns it in a few sentences. Again, he says :—

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* The Natural History of Animals, Vol. I. By Thomas Rymer Jones, F.R.S., F.Z.S. Van Voorst, Paternoster Row.

" *To possess the faculty of moving from place to place* has been said by some authors to be the peculiar attribute of an animal. The plant, say they, is rooted and fixed ; the animal is endowed with locomotion, and able to rove about in search of food. But even this distinction, we shall hereafter see, fails in very numerous instances. In the animal series there are living beings that are immovably attached to some external object during the whole period of their existence, and seem to be as devoid of locomotive power as any vegetables. Again, on the contrary, there are plants that evince this faculty, and are, to a certain extent, capable of changing their situation ; consequently, this second characteristic is as insufficient as the former.

" Perhaps the best definition of an animal that has yet been offered is, *that animals are possessed of an internal receptacle for food, wherein they collect the nutriment destined for their support;* in other words, that animals are provided with a stomach, while plants are only permeated by tubes, through which the nutritive juices flow equally to every part. But, unfortunately, in the very first class of animals that awaits our notice, the SPONGES, there is no internal reservoir of aliment whatever, nor anything that can be compared to a stomachal cavity; so that our attempts at discrimination are once more baffled.

" Chemistry has been appealed to, in order to solve this important question. We are told that animal substances contain an abundance of *Azote*, or *Nitrogen*, in their composition, while vegetables do not furnish that element : —that the existence of the azote in question causes animal matter to emit a smell like burned horn when fire is applied, a circumstance that is said to be sufficient to identify it. This, to say the best of it, is but a clumsy distinction, and, moreover, is open to fatal objections ; for there are vegetables that contain azote, and that, perhaps, as abundantly as many animals. In the midst of these difficulties, modern science has had recourse to an entire new line of investigation, which, doubtless, will ultimately yield important results connected with so intricate an inquiry. This is based upon the different appearances presented by the *tissues* or component structures of animals and vegetables respectively when they are accurately examined under high magnifying powers ; and, as an instance of the success that may be anticipated to result from this line of research, as well as of the near approximation between the animal and vegetable kingdoms, even in outward appearance, one example will be sufficient for our present purpose. The *Corallines* are, for the most part, decidedly animals, and many of them, as we shall hereafter see, animals of very complex organization ; but several of these, *e.g. Corallina opuntia* and *C. officinalis*, which, from their almost exact resemblance to Zoophytes, were supposed to have the same structure, and were unhesitatingly admitted by Cuvier into the animal series, have been found, by examining them with a microscope, after the hard calcareous matter is dissolved out of them, to belong to the vegetable world ; inasmuch as they are composed of vegetable cellular tissue, which, having a peculiar arrangement, is readily distinguishable. Thus, therefore, when we are better acquainted with the microscopic appearances of the different tissues that enter into the composition of organized substances, important facts, calculated to throw light upon the subject we are now discussing, may reasonably be expected.

" But we must advance a step further yet, before we have fully laid before the reader the difficulties that attend this piece of investigation. It has recently been stated, and apparently upon good foundation, that there are organized forms that are vegetables at one period of their existence and animals at another. Many of the *Confervæ*, for example, are equally claimed by Zoologists and Botanists; and some among these, as the *Oscillatoriæ*, are said to be possessed of locomotion in one stage of their growth, while in another they are fixed and motionless. So nearly, then, do the animal and vegetable worlds approximate, remote and separate as they appear to be when examined only in their typical forms. Light and darkness are distinct from each other, and no one possessed of eyesight would be in danger of confounding night with day; yet he, who looking upon the evening sky would attempt to point out precisely the line of separation between the parting day and the approaching night, would have a difficult task to perform. Thus is it with the Physiologist who endeavours to draw the boundary between these two grand kingdoms of nature; for so gradually and imperceptibly do their confines blend, that it is at present utterly out of his power to define exactly where vegetable existence ceases and animal life begins."—Pp. 5—8.

This much appears in the first chapter, and the deep interest that pervades every paragraph of the work renders it exceedingly difficult to select one passage in preference to another. If, indeed, we could quote the embellishments as well as letter-press, which are executed in the style that distinguishes nearly all the works which Mr. Van Voorst publishes, we should have no difficulty about the matter; for it would be no easy task to select either an engraving, or the passage referring to it, that would not be acceptable. The chapter on sponges, the second in the volume, gives us the true nature of those extraordinary productions; showing that it is not only all life and animation, but refers to the mode of increase and the locomotion of the future animals; demonstrating most clearly that a substance which has been considered little better than a stone in the order of creation, is actually a living being, capable, in the earlier part of its career, of moving about, though fixed at a later period, to grow, and bring forth young in large numbers. After this, of course, we are prepared for anything. As the author concludes his chapter: "With these facts before us, relative to the capabilities of living matter, we are prepared to investigate the next forms of creation that nature offers to our inspection." We now come to the consideration of the third chapter, which treats of "Agastric Zoophytes, Fungiæ, Meandrinæ, and the History and Properties of the Hydra Viridis;" the most extraordinary, perhaps, of all animalcules. The author, in the fourth chapter, gives us his "Classification of the various forms of beings composing the animal kingdom."—1. Mammalia. 2. Birds. 3. Reptiles. 4. Fishes. 5. Insects. 6. Vermes, or Worms; thence to the subdivisions of each, dispelling as much of the mystery and technicality of philosophy as is compatible with his subject, and rendering all things plain and intelligible. Perhaps the most remarkable and least understood wonders of the world may be found in the Infusoria, or animalcules in water, perfectly invisible to the naked eye, but of inconceivably beautiful structure, so perfect as to lead us to doubt our own senses when the reality is before us. Here we must allow the Professor to speak for himself:—

"Some Infusoria nearly allied to the *Proteus*, and furnished with bodies equally contractile, are able, notwithstanding the mutability of their shape, to construct for themselves shelly defences beneath which they can retire for shelter or protection. In the *Arcella*, for example, you find an *Amœba*, for such it is essentially, covered over with a shell, resembling that of a limpet; and truly there are some physiologists fanciful enough to imagine that we have here, in rudiment, the sketching out of what in higher animals will show itself under more perfect forms; so that the shell-fish and the tortoise are here typified amongst these humblest animals. How that may be, we will not pause to ask; it is sufficient for our present purpose to learn, that, minute as these Infusoria are, they are, many of them, able to construct for themselves shells of extreme beauty and elaborate workmanship, which, under a good microscope, will bear comparison with the most exquisitely sculptured that are to be found in the cabinets of the conchologist.

"It is not, however, from their minuteness or their beautiful sculpture that these microscopic shells principally merit our notice: small and invisible as they are individually, it is perfectly possible that, in the lapse of ages, even these exuviæ of animals, of whose very existence man would for ever have remained ignorant but for his glasses, may, by their accumulation, absolutely change the geological features of whole regions of this world, and give rise to the existence of strata of soil, of no trivial interest or importance. We have before us a quantity of earth, brought from the shores of Lake Lettnaggsjon, near Urnea, in Sweden; an earth which the inhabitants of that country have, from time immemorial, regarded as being nutritious, and from this circumstance, as well as from its whiteness and excessive fineness, it has received from them the name of *Bergmehl*, or mountain meal. Mixed up with flower this substance is even used for bread; and was formerly thought to be an exception to one of the most incontrovertible facts with which we are acquainted,' namely, that the mineral kingdom does not furnish food for the support of animals.

"Ehrenberg, the illustrious investigator of the creatures we are now considering, struck with the singularity of this mountain-meal being nutritive, examined it microscopically, and his well-practised eye at once detected that it was entirely composed of the shells of animalcules. These, the producers of the shells in question, had for ages occupied the waters of the districts where the nutritious soil is found, and generations after generations having perished in countless thousands, their exuviæ continually subsiding to the bottom, have slowly formed a stratum of earth of such thickness as really to be an important article of diet to the inhabitants of the country, in consequence of the quantity of animal matter entering into the composition of the shells.

"The discovery of the real nature of the *Bergmehl* was, however, but the first step in a field of investigation that now promises to be of boundless extent, and fossil infusoria have since been everywhere met with in startling abundance. The polishing slate of Bohemia *(Polischiefer)*, so extensively used on account of its adaptation to polish very fine surfaces, is entirely made up of such remains, which, from the angularity of their shape, their extreme minuteness and silicious hardness, are well fitted to the use for which they are employed by the artificer. We also possess numerous other examples, from different parts of the world; but, what an overwhelming subject of contemplation to the reflecting mind! to think that every grain of dust whereon he treads may have been a living creature; and what ideas concerning the immensity of the animal creation does not the thought suggest!"—Pp. 110—113.

The phenomenon so much spoken of, and written about, the phosphoric appearances in salt water, has occupied the attention of many, and been considered unaccountable; but nothing seems to have escaped our author; and the more we read the work, the more do we find proof upon proof of his persevering research, and, which to us is a most gratifying truth, the right feeling of the lecturer. Here is no philosophy to shake the faith of the multitude in the existence of a Divine origin; no atheism or deism, the usual accompaniments of ancient writers and modern copyists: every line teems with evidence of the power and goodness of the Creator, by whom we are "fearfully and wonderfully made;"—and the author does not once allow the subject to be unconnected with the infinite power and wisdom of the Almighty. We cannot, in fact, dismiss the volume for the present with a more appropriate passage than that which relates to the phenomenon just mentioned:—

"There are few of our readers who have not had an opportunity of witnessing the splendid spectacle sometimes presented by the sea, when every wave is luminous and shines with phosphorescent brightness; even in our climate, during summer time, the ocean seems to glow with liquid light that streams from every ripple on its tranquil surface. Should a passing breeze sweep over the bosom of the deep, a blaze of splendour follows it that spreads for miles: the sailing ship leaves a long wake of glory, stretching far behind it: the raised oar drips with bright gems; or should the hand take up a little of the water, it seems turned to living diamonds as the agitation calls its splendour forth. Should you inquire the cause of a phenomenon so beautiful, the sailor universally replies, it is 'the saltness of the sea,' and, seeming well satisfied with this mysterious explanation, appears to deem the subject settled. From age to age the inquiry goes no further,—and why? Because when first the question was discussed philosophers themselves assigned this reason, and their *dictum* still exacts unquestioned homage. Being much amused at hearing this answer invariably given, we were well pleased by accident to find the source of such a doctrine. Turning the pages of old Thomas Hobbes, one of the patriarchs of modern science, whose works upon Philosophy and Physics appeared about the year 1665, when knowledge still was young, we found the following explanation of 'the cause of light in the concussion of the sea-water.' 'Also,' says that truly learned old writer, 'the sea-water shineth when it is either dashed with the strokes of oars or when a ship in its course breaks strongly through it; but more or less according as the wind blows from different points. The cause whereof may be this, that the particles of salt, though they never shine in the salt pits where they are but slowly drawn up by the sun, being here beaten up into the air in greater quantities and with more force, are withal made to turn round, and consequently to shine, though weakly. I have, therefore, given a possible cause of this phenomenon.'

"Ingenious as this theory might be deemed in those days, when physics and metaphysics reigned triumphant, and were constantly appealed to, to explain by subtle theories, not facts, whatever seemed abstruse in nature, widely did they err from the grand truth. Throughout this immeasurable expanse of waves that encircles all this globe, sharing the already crowded drops of water lavishly, these stars of ocean have been sown in microscopic myriads, a living milky way. Partly from their small size, but more from their extreme transparency, they escape all observation by day-time, nor can they be seen even by the microscope, so perfectly translucent are the bodies; but as the night reveals the stars of heaven, so does the darkness bring to light these living luminaries, else invisible, contrasting, as it were, with those above, and silently repeating the great truths they tell.

> ' To Him, no high, no low, no great, no small;
> He fills, He bounds, connects, and equals all."

—Pp. 176—178.

Most cordially do we congratulate the scientific world, as well as the multitude, on the acquisition of a volume which is as plain and popular in its language as it is valuable for its instruction.

THE PLAIN WAYS OF GROWING ASPARAGUS.

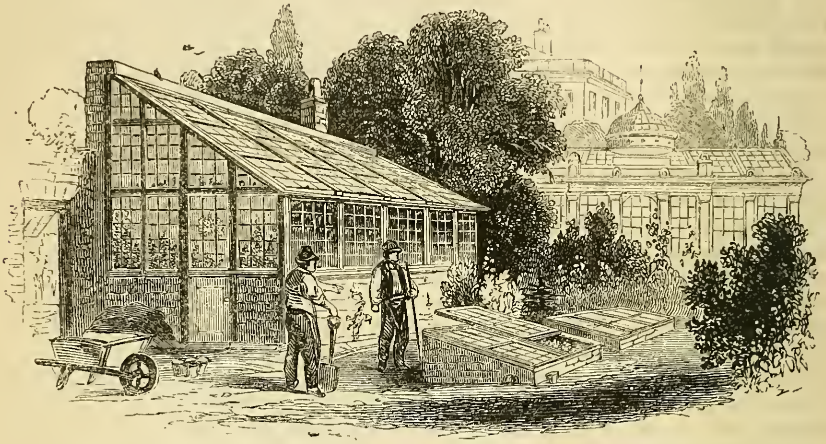
There is much more trouble taken to grow this vegetable than there is any necessity for, and although I agree with the practice recommended in the Gardener and Practical Florist, in a general way, I have been two years growing it on another plan, which I began by accident, and now forward you the result. I raised some hundreds of seedlings, and sold them out. There were, however, a considerable number of them carelessly and unintentionally left in the bed, which was made up of very rich soil, and they consequently grew very strong. They were so nearly covered all over the bed, that I left them, having a notion that they would do for three year-old plants the next season. Here they remained without being earthed up, or anything else but weeded. In due course of time they came up fine buds, tempting to cut, and the only disadvantage was, that some of the crowns were all but above ground, so that there was no length of white; and, therefore, I let them grow three or four inches of green, and then cut them, so that every morsel could be eaten. The next year, all I did was to raise the ground, by throwing two inches of soil over, and no more. The crowns were just covered, and that was all. The season after they came strong and good, so much so, that I have since that period grown my asparagus in the most simple way. I first dig out a trench about eighteen inches broad, and as deep; I then half fill it with dung well trodden in, and return the soil which I have taken out, until I level the surface, leaving a considerable bank on the side which is north-east or east, as the case may be. This level surface will sink in a few days, and I draw down more earth, so as to make it quite level with the original surface of the ground. It is best to do all this in summer time. Along these ridges I plant, in the autumn, two-year old asparagus roots, nine inches apart, in a single row only to each trench, and draw the bank of spare soil down upon them, in a sort of rounding form, which throws off wet, and let them bide their time of coming up, which they will in pretty good strength in April or May. I keep them clear from weeds; and the second season, without any other trouble than throwing a little earth on the crowns in the autumn, and raking it off again in the spring, I grow the finest asparagus in the county. I dig the dung into a trench, that the plants may be permanently strong; for it has improved every year for some years, both in quantity and quality. I presume the roots get down to the dung after a while, and thus obtain very great nourishment. In all this there is nothing very troublesome. There is no more difficulty in preparing, than there would be in trenching for celery; and my object was, to see whether asparagus could not be grown, like all other crops, on the level ground, instead of on high beds, so as to enable me to crop between with greater advantage than I ever could in deep gutters; for in this mode of culture, be it remembered, there are no alleys, no breaking down of the edges, but simply plants growing like cabbages, or any other crop, close down on the ground, and within two inches of the surface, cut without any white handle, and all eatable. I observe in your calendarial notice of this vegetable, in the Gardener and Practical Florist, it is recommended to all gardeners to let the head grow three inches, for the sake of increasing the eatable portion. I have followed this advice with great advantage, and I think, if gentlemen once had it so cut, they would never try any other way. The only objection I have heard made to growing asparagus on the level ground was the trouble of cutting. "Use is second nature." Men and women have been accustomed to walk in the trenches, and have to cut from beds as high as a table, and therefore they find the difference between that and stooping; but nursery men and market gardeners might, if this excuse were permitted to weigh a moment, grow onions upon the same plan; for weeding onions, and thinning them out, are labours by no means enviable. Spinach is quite as much trouble to pick as asparagus is to cut; drawing of radishes and small onions requires the stooping posture quite as much, so that the excuse is at best an idle one. I like growing on the ground for many reasons; first, because the plant has more nourishment in rains; secondly, the manure is not washed away into alleys; thirdly, because other crops can be grown between without affecting it at all; but I have since grown asparagus on a still plainer system. I have dressed the ground all over in first-rate condition, and have got this in high order. About February or March, or even April, I draw drills, three feet apart, and sow the berries thinly along them, just covering them and no more. When they come up, I thin them, so as to leave the plants about eight or nine inches apart. Here they are allowed to grow to the third season, when, just before they come up, I draw earth up so as to cover the crowns about two inches, and not more. I have the finest crops that can be wished, cutting them when about four inches above the ground, as before mentioned. I have had beds for years; and they seem inexhaustible. One year I have cabbages all through the winter, another brocoli: as soon as the cutting is over, a row of anything that will come off before the cutting time, is sure to do well. The dressing of the space between, scarcely a spit wide, is little trouble; and the ground being flat, there is every chance of both doing well. In a private establishment, where room is an object, and you want flavour and quantity instead of appearance, this plan is excellent; but I would not recommend it for people who want five or six inches of blanched, uneatable stuff for market, because I have found that the roots buried so deeply have rotted very frequently, and cannot be got at to cut at all. My plan will do well for those who eat asparagus at home, and are content to cut at the surface, and the advantage of so growing it will be found great. Z.

IMPORTANCE OF GLASS IN HORTICULTURE.

The application of glass to numerous purposes to which it has never been applied before, will ere long astound people who are not given to thinking; but one of the most common and popular uses will be that of superseding earthenware in many cases, iron in some, and it would be no great stretch of imagination to fancy it will in some cases supersede slate. Hitherto the cost has shut it out from hundreds of useful purposes to which it might have been applied, while the restrictions put on its manufacture by the necessary strict rules of the excise, was a bar to experiment and improvement. The duty was imposed by weight, the consequence of which was, that for all horticultural purposes glass was used too thin. The Hail Storm Insurance Society may now make up their accounts to insure the buildings only on the old scale, for hereafter but little glass will be used that will flinch at visitations of this kind. If a foot of glass weighed a pound, it paid a shilling duty, and this was respectable in thickness; but lower that to twelve ounces to the foot, and it saved fourpence per foot duty, and not more than three-halfpence of actual cost. We are speaking now at random as to exact figures, but they are near enough for all our present argument. Here then is, or rather was, a frightful tax upon utility, and a complete prohibition against using heavy glass for any purpose that could be accomplished by ordinary means. It is quite certain that a glass roof would be as cheap as almost any other that could be made, and at the same time as strong; and here we have at once one of the most cheering boons that could be given to the horticulturist. There will be no occasion now to be sparing of light. Glass, for ordinary purposes, may be the eighth of an inch thick, or even a quarter, without being so costly as the fragile stuff we have put up with for years. But we are not to confine our notions to the transparent material we are accustomed to contemplate, when we speak of glass. The use of glazed earthenware pipes at the nurseries on the Continent has been favourably noticed, and some of them have pipes on a very large scale, where they are found to answer every purpose of iron, and to be free from the objections to which that material is subject. Now, if earthenware pipes can be made to answer, a coarse kind of glass is infinitely stronger, and less liable to accident. We have nothing to object to on the score of price; for we can hardly conceive a material much cheaper, or so easily and plentifully supplied without aid from abroad. It has been said that iron in a heated state rapidly deprives the air of its oxygen, and this is held on the Continent to be highly injurious in close houses, while earthenware pipes have no such objection, and plants thrive in a marked degree wherever they are used. The objection, therefore, to iron in the construction of houses, applies the more strongly in proportion to the extent of heating surface required, and the temperature kept up. Hence, from the constant supply of air in a green-house, which is open in all weathers but frost, and the small quantity of heated surface required, the mischief may not be perceptible; but in a stove of high temperature, depending on heated iron pipes for its warmth, the objection would be greater. But whether this objection be tangible or not, glass would be much cheaper than iron; and the advocates of the tank system will be as much served as the advocates of pipes, because glass shall be pronounced, without any exception, the very best material for holding water. There is, however, one vast benefit that must arise from the diminished price of glass; a house will not require the same degree of heating with thick glass that it does with thin glass; and we are not quite sure that a conservatory which is glass to the ground, if glazed stoutly, will not be quite as warm as if it were bricks and mortar; while we are quite assured that the glass will not absorb and waste a quarter so much of the internal heat as a wall. Thus a conservatory all light will be actually warmer than a room with glass sashes and roof. We trust that some of our readers will at once set their mind to work upon the subject of new horticultural buildings, calculating upon the free use of glass of a good, sound, useful thickness, that will bear an accidental blow without shivering to pieces, and using as little brickwork as may be, for the sake of elegance, and neatness, and light. We may know by the use of the thick bell-glasses, and their advantage over the thin hand-glasses for the protection of things in winter, how very important thickness is, in the construction of protective means for plants; and it should have been a lesson to us long since; but it is quite impossible to have profited much, even by that lesson, while the oppressive duty remained on the material. Let us now hope that the boon will be appreciated; that, as all restrictions are removed, there will be many profitable experiments made in the production of the material; that the cheapness may lead everybody to construct glass-houses for plants, and that the relief from this enormous tax may induce a vast number who have never yet owned a green-house or a hot-house, or taken the least delight in plants, to enjoy a covered garden in the depth of winter, where they may appreciate the beauties of the spring, while the very roof they are under, and the ground outside, may be covered with snow. There is no class of persons in the country, who will so instantly receive the benefit of the repeal of the duty on glass as horticulturists; for although the present stock of glass will be depreciated in value, it will only be on account of improved opportunities of purchasing additional stock. H.

HINTS FOR COTTAGERS' SHOWS.

All Horticultural Societies ought to provide encouragement for cottagers, and the prizes ought to be numerous, and carefully arranged. They should be invariably given for useful, and not ornamental things. Hence it will be seen that we differ from all who give prizes for flowers. We consider that the entire energies of the cottager should be devoted to useful productions. He can grow flowers for his use, to give away, or to look at, and will do so if he likes them; but we would never have a shilling expended in the encouragement of that branch of gardening. We should also omit all prizes for articles of luxury, and for such fruit as comes without the exercise of skill. Three-fourths of the prizes awarded at country shows are given for subjects which ought not to be encouraged, or for productions which it requires no talent to produce. The former does not advance the cottager or his interests one jot; the other cannot exalt his feelings, or improve his mind. Let us look at all the items in a country schedule for the cottager. We find the best six dahlias, the best six pinks, the best twelve pansies, the best six hollyhocks, the best six roses, the best nosegay, the best twelve stocks; and so we go on through a long catalogue of flowers. Now, let us ask, what good is this calculated to effect? What is there to admire in a cottager niggling about tying up pinks, or shading dahlias? What the better is his table covered, or his permanent interests advanced, by diverting his attention from that branch of gardening which benefits his home, which feeds his family, and saves his earnings? We do not object to a cottager growing flowers, but we repudiate altogether the idea of tempting him to do it by offering him prizes. Another class of prizes to which we have alluded consists of those given for apples and pears, plums, damsons, and all other fruit borne on established trees; first, because there is no merit nor industry in producing them; second, because it is unfair towards those cottagers who have no trees. There is a third class of prizes which really causes no useful labour, no profitable employment; for instance, ripe gooseberries, raspberries, strawberries, and such like. There may be a little cunning exercised in protecting the fruit on the trees; but that encouragement should be given that will place the greatest number upon equal terms of showing. For instance, give more prizes for the best potatoes, the best cabbages, the best peas and beans,—all of which tend to the comfort of the home,—the best lettuces and cauliflowers, and other things useful, and which require skill and industry to produce in perfection. We maintain that not a solitary prize should be given for any subject that was not useful in a family, and that did not require industry and attention. Cottagers will grow flowers for their amusement and relief, for change of work, and for the sake of their beauty and fragrance. There is no reason why they should not, but they ought not to be encouraged to do so. All the proper objects to be attained by cottagers' prizes are to excite their emulation on things useful, to invite them to industry in the production of food, and to promote the habitual application of their over hours to their ground; and there should be a reasonable number of prizes in each class to do this, and they should descend by small differences. No man should be allowed to show two things in the same class. At one place we visited last summer, there were ten dishes of potatoes shown by one man; and it so happened they were for the most part the finest, and he became entitled to the few prizes there were for that subject, while many other deserving men went without. There ought to be a large number of prizes, and a distinct provision that no man should show more than one exhibition of a sort; that is, if there are ten prizes for round potatoes, and ten for kidney potatoes, a man should only show one dish of round, and one dish of kidney. Again, suppose there be ten prizes; the head prize might be 5*s.*, the next 4*s.* 6*d.*, the next 4*s.*, and so on down to 6*d.* In this way, a few subjects highly useful to the cottager may be encouraged, and a good deal of that frippery which is of no real use, and to produce which there is neither talent nor industry wanted, may be dispensed with.



HORTICULTURAL BUILDINGS.

Perhaps there has not been at any period within the last few years so many persons newly engaged in gardening; and certainly, not for a much longer period, so many contemplating, or actually engaged in, the construction of Horticultural buildings. That some persons make this branch of the business their chief occupation is well known; and there are those who would fancy from this circumstance, that these would be much lower in their prices than the builders of ordinary houses. Now this is a wrong impression; manifestly doing, however unintentionally, an injustice to a large body of skilful men. There is not a single point in the construction of a hot-house, stove, green-house, conservatory, or other plant-house, which is not as simple as the most ordinary carpenter's, bricklayer's, and plumber and glazier's work. There is, therefore, nothing to prevent an ordinary builder from executing the work as cheap and as well as anybody. All he wants is, the dimensions of the space you require inside, in height, width, and length; the general form, whether it is to be a ridge roof, or a lean-to roof, or a fancy iron one, and what size you like the panes of glass. The repeal of the duty on glass will have so reduced the price of that material, as to encourage everybody to have at least a green-house; and this induces us to publish a few remarks by a practical gardener upon the subject of Horticultural buildings. We do not preach the doctrine of "every man his own builder," but we do recommend people to be their own directors as to the room they require, and certain other peculiarities, of which they must be the best judges; and so far as the uses of each of the different varieties of plant-houses go, the hints will be found useful, and may be depended on to answer their several purposes.

The Stove.—This rather inaptly-named house is understood to be built upon a plan which enables us to give a much stronger heat than any other description of house requires; and, independently of being constructed with a means of conveying a larger quantity of heat than other houses, it is always understood to have an inner apartment, in which tan, or other fermenting matter, is placed, to give bottom heat to pots which are plunged in it, or placed on it. The building is constructed to give all the combined advantages of a tan-pit, and a highly-heated building. The most common, and, until we have seen better, we shall be apt to think the most effective, plan, is that of some of our ancestors. A house built in all respects like a lean-to green-house, say the width from back to front (although there is nothing to limit the size in any way) eighteen feet; three feet of this for a path at the back, two feet six for a shelf or stage in front, two feet six for a path next to the front table or stage, and nine feet to be occupied by the tan-pit. The house may have two feet six of wall above the ground, and two feet six occupied with the plate, front windows, and the resting-place for the roof; this will make the height five feet in front, and fifteen feet behind. The pit in the middle may be three feet in front, and four feet six inches high behind, a parapet stone, or slate coping, being placed on the top of the pit wall all round, and the sides to slope properly from back to front. All the front upright windows should open with sliding motion; there should be a door at each end; portions of the end windows should open, and the upper half of the roof lights should slide down. Inside the pit, the floor should be two feet lower than the paths, and a false bottom should be laid six inches higher than the real one, leaving a hollow the whole size of the pit, all but the actual supports of the false-bottom. Gratings in both the back and in the portion of floor under the front stage should communicate with this hollow underneath the pit, and the principal heating apparatus should be under the front stage. The effect would be, that the heated air would ascend, and as it reached the back, it being cooler than it was given off, it would descend through the gratings in the back path, and come out among the heated pipes or flues, or hot-water gutters, or whatever other mode of heating might be adopted, and be again heated and given off to go its round, forming, with every door and window closed, a complete circulation of air. The centre pit should be filled with tan, in which such plants as require it can be plunged, and on which such as do not may be placed on any flat surface. Such is the construction of an old-fashioned pit, except the hollow bottom to circulate the air, upon the plan of the late Mr. Penn, now carried on by Mr. Hill, of Lewisham; but there are now many ways of obtaining heat, and many ways of constructing the apparatus; nevertheless, the stove must have a capacity of ranging from 55 to 100, though rarely wanted so high, and the more steady the temperature can be kept the better. We have seen Mr. Wilmot's, upon Mr. Penn's plan, up at 120 without feeling at all oppressive with the doors closed; the heat being the only sensation, for the breathing was as free as if we had been out of doors. In such a stove as we have described, tropical fruits could be grown and ripened in perfection; yet it would do for the most delicate plants.

The Greenhouse.—This useful appendage to almost every good garden is generally formed, in its exterior appearances, very like the stove or hot-house, but with a more lofty roof; because, as the temperature is never wanted more than forty degrees, and would, in fact, be none the worse for five degrees less, so it never went down lower, there is not the necessity for keeping the roof low. It hardly matters what size it is, nor how many feet of air it contains; whereas, in the stove, where the heat should be continually many degrees higher, it is contrived that the roof shall be more flat. Many green-houses are fifteen or twenty feet high behind, and five or six in front, the roof pitching at an angle of forty-five. The interior has no pit, but shelves, ranging one above another, from the wall to within three or four feet of the front, unless there is a front table or stage, in which case it must, of course, not come so forward; as there must be a path in front of the sloping stage, between that and the front table. The stage is put near to, or at a distance from, the glass roof, according to the size of the plants for which it is intended. If for private use, there must be room for plants four or five feet high; if for nursery business, a much shorter space will answer better, for all plants are the better for growing near the glass. The shelves are made to rise one above another, like the flat steps of a step-ladder; and they must be wide enough to hold good-sized pots for private use; or they may be narrow enough for mere nursery pots if they are for the purposes of trade. The difference is, that in the green-houses of private persons the plants are kept to grow, and in nurseries they are got rid of before they attain any size. The green-house is intended to keep away frost, and wind, and wet, but no more. It is not proper to keep fires in them, except sufficient for that purpose, though in frosty weather it is very difficult to preserve a low temperature without running a risk of its getting too low. Green-house plants, properly so called, are such as will not stand frost or frosty winds. For example, most of the Cape or Botany Bay plants, Heaths, Epacris, &c.; but the Azalea Indica, the Camellia Japonica, and some others, are called green-house plants, though they will live in the pit without any heat, and stand some degrees of frost. Thus, it is better to hang a mat in front of a green-house for a slight frost, than it is to light a fire; but if fire must be lighted, it should be for as short a time as it is possible to keep frost out by, and as small a fire as can be made to answer the purpose. Green-houses are always better for having top lights, not puttied in the lap; for a tolerably dry atmosphere is so necessary to green-house plants, that fires are sometimes obliged to be lighted to dry the house when there is no frost. In these cases the top sashes of the roof must be let down, and if there were not the vacancies in the laps of the glass, even that would be insufficient; but as the vapour can get off through the laps of the lights, you are enabled to close the sashes earlier. Upon the whole, then, the green-house may have a much higher roof than a stove, without disadvantage; but it should have a more upright roof, and it must have a stage of shelves, instead of a pit for tan. The heating apparatus may be much less in quantity; but these are the exceptions, and the only ones, to its being formed like a building meant for a hot-house. Green-houses may be built with a ridged roof like a barn, where it is desired to be so; but ridged roofs let off heat more than lean-to roofs, take up more room, and must stand out away from a wall.

THE PIT.—Although there are, perhaps, a hundred different constructions properly called pits, the common acceptation of the word is a brick building, of the form of a deep or shallow frame, to be covered with glass, intended for the protection of half-hardy plants. Such pits, covered with a mat, are sufficient for a large number of plants which are impatient of heat, and with some pains will keep most green-house plants through ordinary winters. They are also used for regulating the season of bloom, not only of plants for forcing, but also of plants which it is not usual to force. For instance, Camellias, Azaleas (Indica), hybrid Rhododendrons, which are not hardy, and many other plants, may be retarded in a pit so as to bloom three weeks later than others kept in a green-house. They are also proper winter protection for Auriculas, Carnations, Piccotees, potted Polyanthuses and Pansies, and other subjects which, though quite capable of living through ordinary frosts, will have their blooming greatly affected by exposure to the alternations of wet, dry, wind and frost, which succeed each other, and especially wet and wind, which are fatal to such plants. Again, perfectly hardy plants, when potted, may be killed, because the fibres next the side of the pot will often be destroyed by frost, when the plant in the open ground would not be in the slightest degree affected. This particularly applies to the hardy plants usually forced, or, if not forced, at least bloomed and used in pots, for the convenience of removal while in bloom. Pits, therefore, vary according to the plants they are to hold, some being only one foot high in front and two feet behind, and from back to front about the same as an ordinary garden-frame, say five feet six inches; while others are two feet in front and four feet behind, with a depth from back to front of eight or nine feet. Some also are made without shelves and some with them; but as these are constructed after the pit, at any time, and may be varied from time to time, according to your wants, they form no essential part of the pit. Our own notions of the convenient size for a pit is a depth of about fifteen inches in front and three feet behind, six feet from front to back, and as many lights in length as you please, but the lights not more than three feet six inches in breadth; in these you can reach a plant which is in the centre, from either the back or the front, whichever is the most convenient. The bottom of it should be solid, hard, and dry, and so contrived, that the wet from the process of watering should run off. This may be done by gutters, or by a general slope from back to front, and a means of escape, and then a sufficient quantity of gravel to make it level for the pots to stand in; the water will then sink at once through the gravel and escape. To many plants the damp which arises from the water which sinks into the ground after watering, is fatal. Many have the pits constructed without the means of escape for the water, and fancy that by having wooden shelves kept well above the ground, they have done all that is necessary; and so for years the surplus of waterage falls below, out of the way of the plants, it is true, but merely to sink into the ground until there is a noxious vapour which mildews everything; and they wonder, at last, how it is that nothing does well. The best way is to make a paved bottom, sloping to the front, and leave small openings, that the water may freely run off. Upon this have enough small pebbles or gravel to make the surface even for pots to stand level, and then you have nothing to care for—your frame will be perfectly free from damp, your plants free from mildew. For Auriculas, Carnations, and Pansies, wooden garden frames would do as well as brick pits; but if the wood is thin, there should be a wall of turfs outside it. When they are kept in pits, there should be wooden shelves to keep the plants up near to the glass, for they all love the light; and to show the importance of a dry, free air, we have seen a whole collection of Auriculas damp off in a pit of large size, where they were on shelves near the glass, high and dry; and on examining the place, by removing some of the shelves, we found the under part a complete mud swamp, with the rotten leaves which had been picked off from time to time, and dropped between the shelves, and the accumulation of many months' watering, which had no means of escape except by evaporation. So much for the pit; but since the pit was first talked of, we have hot-water pits, dung pits, bark pits, and a hundred other distinctions, which require distinct notice; in the meantime we must call this, we suppose, the cold pit.

THE CONSERVATORY.—This may be called the winter garden, and so that it be light enough, and well ventilated, it may be of any form or fashion, but suited to the situation in which it is placed. It should, however, have an entrance from the house; it would not be the worse for being entered from the best room in the house. It should have folding doors, glass to the ground, that it may be viewed in perfection, without the necessity of even opening the doors. It should be lofty and airy, and if it be glass all round to within half-a-dozen bricks of the floor, so much the better. This may have some plants in the ground, but care must be taken that it be not crowded, nor its capacity for being dressed out with flowers got to perfection elsewhere, be at all trenched upon. For this reason the subjects actually planted in the ground within it, should be only such as are handsome all the year round; and such, also, as require no extraordinary heat at any one time, so as to injure the others, or to render it necessary to curtail the supply of flowers, or to keep the house in other respects bare, while any particular management is applied. The Camellia, therefore, has always been justly esteemed a favourite. It is at all times a beautiful evergreen, and for several months it is a splendid object, from its bloom. Botany Bay plants of many kinds are favourites. Hoveas are beautiful objects, and thrive well; and their rich purple blossoms form a noble contrast to the red, white, and striped kinds of the Camellia; several of the Acacias are also splendid objects, and their golden flowers fill up the picture for the spring. None of these require any treatment but that which can be given without detriment to other plants and flowers. Rhododendrons and Azaleas of the finer kinds add also to the effect, and grow into noble specimens, but these things must not be crowded together. To grow handsome they must be a long distance apart, for a very few years would make them outgrow the place, however large, unless room is given for them to grow handsome and bushy. The heat which is necessary in frosty weather should be given round the outer boundary; and it is best given under the path, for it is then most effective, in consequence of the frost affecting the outside first and most, and consequently being best counteracted by the heat being given off near it. The heat ascends directly up the side, then up the roof, and while it is at the top it cools, and comes down among the plants which occupy the main body of the house, and makes its way to the side to be heated again, and to go its round as before. The most simple form of building is a ridge roof and upright sides. The sides should be at least ten, and may be fourteen or fifteen feet high; the sides may be formed of part sashes and part doors, or all sashes, so as to throw up the lower or pull down the upper halves; and there may be at the bottom, inside, two feet allowed between the outer edge of the path and the sides, for the purpose of being able to stand a row of plants. The roof should be formed of ordinary lights, the top row on both sides being made to slide down. Tall plants may be in the middle, and short ones nearer the side; so that when the house is dressed out with plants in pots, it should present a sort of bank of flowers and foliage. There may be pillars to support a few very choice climbers, as well as help support the roof; and pedestals, tripods, and other ornaments, to hold fancy pots and any choice plants; and the fancy may rove in all manner of ways, for the conservatory is essentially a fancy building. The bloom must be kept up by means of forcing all the plants that will bear it, from season to season; but it must be kept dry and cool, though perfectly free from frost, for this would destroy the choice plants, if once fairly admitted. There are no dimensions that can be fairly given, because, from one of twenty feet by fifteen, to one of fifty feet by twenty, or a hundred feet by fifty, all will be equally applicable so far as the name goes, and its proper dimensions must depend on the place it is to fill.

The Orchideous House.—This building need not differ materially from the stove, but provision must be made for considerable moisture, great heat, and good shading. Orchideous plants are mostly parasites, growing on the branches or trunks of trees, where there is sure to be shade; and, as they are inhabitants of hot countries, the fact of their flourishing in more heat, more shade, and more moisture, than plants which grow in the earth and in the open country, is not surprising. The various modes of supplying moisture are, first, by syringing frequently; next, by watering the iron pipes or flues in the house, to raise a steam; third, by troughs of water on the iron pipes kept filled with water, and constantly giving off steam; lastly, by open tanks, by means of which the house itself is warmed. The tank system has been made a great fuss about of late, and half-a-dozen conjurors are fancying themselves inventors. It has, however, been many years in use, and as every change in the mode of building, or the mode of heating, causes a certain number or fidgetty, changeable people to lay out money and alter their plans, however well they may be answering, there will assuredly be constant changes as long as people can invent them—like quack doctors with their medicines—and find people to give certificates of their efficacy. The most annoying thing about all these changes is, that a good practical gardener, with a house built any how, and warmed anyhow, will produce things to beat those who have all the fiddle-faddle modes of heating, and moistening, and shading, that can be thought of; and it is questionable whether the gardener whose master is always changing has half the chance of growing things well, that a man with a good old-fashioned house has, whose plants and plans are undisturbed. Not that we object to any one of the modes of heating we have seen, and we have seen pretty nearly every contrivance at present in use. Messrs. Loddiges have a contrivance by which, in a few minutes, they moisten their whole orchideous house, by creating a shower of very fine rain in every part. A pipe goes all round the house, full of very minute holes; on letting water into this pipe every foot of the whole area is covered by the shower. This may be very well for large concerns, but, with a good hand-engine or syringe the same effect may be produced in different degrees, at different parts of the house, and this is an object when we are obliged to grow all the orchideous plants in one house. The roof of the orchideous house should not be too lofty; the less number of feet there are to warm the less expense there is to warm it, while the number of plants may be the same. Another reason for a low roof is, that many plants may be grown on stumps of trees, hung to the rafters, or in wire baskets of moss and crocks and mould. The majority of orchideous plants require moist air to grow and bloom in, but have a season of rest which does not require less heat so much as less moisture; so that the house ought to be divided by a partition, one being thus easily kept dry, while others, which are growing, may be kept moist. We do not object to the house being heated by a tank placed in the same position as a tan-pit; but provision should be made for covering it close when required, or covering and uncovering any one part of it. All that is required is to make a partition down the middle of the tank, to within a foot of the end, away from the supply, and quite close at the end where the supply is given. These tanks are variously built; some with brick and cement, others with iron stone or slate. The size must be regulated by the size of the house. If it is made to hold about nine inches depth of water, it will be enough: upon the whole, perhaps, iron will be the best material. The partition down the middle is for the purpose of guiding the return of the water, which is supplied boiling hot in one of the partitions, traverses to the end the vacancy between the end of the partition and the end of the tank, enables it to turn round and return to the end it started from, but in the other side of the partition. The boiler has two pipes, one at the top, and the other near the bottom. The supply is from the top pipe, while the cooled water returns through the one at the bottom. This is the best, supposing the object were to have everything as simple as possible.

Now, there may be fifty ways of modifying this simple contrivance, but the principle is the same; the boiling water will force itself up to the top, and the cold water will come to the bottom; and if the tank was half a yard distant from the boiler, it would make no difference in that particular. The orchideous house, then, may be of the same form as the hot-house, with more heating apparatus, because there is no tan-pit, and, if hot-water tanks be used, there ought to be a flue round the outside, or hot-water pipes, for the tank alone would be insufficient. It is a common practice now to have open gutters for the water, instead of iron pipes. These are covered up, but may be uncovered the whole length if desired. These gutters are the same as a flue without a top, and at one end the supply pipe from the boiler opens into it, while, after traversing the house, and perhaps communicating with a tank in the centre, the other end communicates with the bottom part of the boiler, to return the cooled water. How the shelves are placed, or the plants are disposed, is completely a matter of taste, and totally immaterial to the plants themselves, which are usually removed to the conservatory while in flower, and are rarely visited by company in the orchideous house itself. An orchideous house may, in fact, be called a moist stove, while the stove or flower-house, with a tan-pit, may be called a dry one.

THE FLOWER GARDEN.*

Mr. M'Intosh, who was some years gardener at Claremont, and is now with the Duke of Buccleugh, at Dalkeith, where he had to form a garden of many acres, is to all intents and purposes a practical gardener, and the author of the present, as well as other works, which have proved useful to his readers in all grades of society. While so many trashy works on gardening are every season emanating from the press, it is quite a relief to fall upon anything of a truly practical nature. Mr. M'Intosh commences his work with the foundation of gardening, the plans of gardens after the Italian, French, Dutch, and English fashions. He then treats of the soil; then of the manures; and goes on to garden decorations, in which department he treats of arbours and summer-houses, shady seats, fountains, vases, baskets, and sun-dials. Thus, before he says much about plants and flowers, he provides a proper place for their reception. We must not, however, forget that, while upon the subject of arbours, he mentions many interesting climbers, and points out their uses. We now come to the flowers and plants themselves: he commences with annuals, which he divides, according to the common sense view of the subject, into hardy annuals, which can stand all weathers; half-hardy annuals, which can bear no frost; and tender annuals, which will not thrive in the open air. This is what we call a right view of the question, though experience tells us, that the seedsman makes a very different kind of division. The author gives lists of many annuals, dividing them into classes for height and colour; such as white, two to four inches high, the same, six to nine inches high, and so on; from those he goes in the same way to yellow, orange, brown, carnation red, pink, red, rose red, violet, purple, blue, variegated, &c. All of which is exceedingly useful to young, and indeed, to some experienced gardeners and amateurs. In describing how these should be sown, he mentions several seasons, but he recommends pots to be placed over the patches where they are sown early in March, as the best means of protecting them from frosts and very heavy rains; these can be taken off in mild weather; when they are large enough, they can be thinned, by carefully removing the superfluous ones to transplant elsewhere. The growth and flowering even of these hardy annuals can be accelerated by sowing in heat, and growing them under protection, until the period of planting out, when they will be greatly hastened. Peas, Lupins, and many other subjects, as hardy as may be, can be sown in pots, and be got almost into flower by the time they would be up under ordinary circumstances of sowing out of doors. This is in reference to the hardy annuals. These he recommends at once to be sown in a hot-bed. Those which will bear planting out, may be sown in pans or drills; but very small seeds, that will hardly bear it, should be sown in pots, to be turned out with the ball whole, or to be plunged in their pots. The author here gives lists of half-hardy annuals, in the same way as the hardy as to height and colour. He recommends the pricking out of half-hardy seedlings in a hot-bed, the same as they are raised in, if they have room. We should prefer a slight hot-bed made on purpose, with four inches thick of good loam and peat on it. Here, according to the nature of the plant, they may be placed at distances of two to three inches, and when removed to the borders, or into pots, they will come up with fine balls of peat and loam hanging to their roots, of which not a fibre need be destroyed. However, Mr. M'Intosh arrives at the same end, if in another way. Those who cannot use hot-beds may sow their half-hardy annuals at the end of April, and many will bloom in fine seasons, though of course later. Balsams are recommended to be sown in January, and again in April, for two seasons; to be planted in sixty sized pots of half loam, a quarter peat, and a quarter rotten dung. As soon as they are large enough, to be shifted from one sized pot to another as they advance, each time lessening the quantity of peat, and adding rich loam, so that at their last shift the stuff shall be three-quarters loam and one-quarter dung. As they advance, and the season advances with them, they are to have more air and sun. Balsams, he says, may also be sown in the border in May. Tender annuals are discussed under the heads of stove, green-house, &c., which departments they belong to. Biennials are treated in the same way with regard to classification:—hardy and half-hardy, colours and height. We come now to a most extensive family of plants, which deservedly occupy a large portion of the work—Perennials, and here we shall make it speak for itself, by selecting the passage on hardy bulbs:—

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* The Flower Garden, &c. published by Wm. S. Orr and Co., London.

"Hardy Bulbs.—Bulbs denominated hardy will endure all weathers without any artificial heat or protection, though some of this class may be made to blossom much finer by occasional shelter from cold, and more particularly from wet.

"Soil and Seed Sowing.—The soil most adapted to the growth of bulbous roots in general, is that of a sandy loam, where there is no stagnation of moisture below. Many sorts of these roots are not, however, very difficult in this respect, provided there be not an over-proportion of moisture. The ground for them should be prepared by digging it to the depth of from six to eight or ten inches, or more, reducing it well in the operation. After this has been done, it should remain a week or ten days before the bulbs are put in, to become perfectly settled.

"From the shrewd and original observations of a very superior writer, the Hon. and Rev. W. Herbert, it appears that there is, with respect to some sorts of bulbs, a peculiarity of soil congenial to them very difficult to analyse. 'When I lived,' he says, 'at Mitcham, in Surrey, Cyrtanthus angustifolius was a weed with me, ripening seed freely, and the seedlings quickly came to a flowering age, and were vigorous, being potted in the soil of Mitcham Common, which is a light brown earth, with a little admixture of the dead furze leaves, on a gravelly substratum. Since I have lived in Yorkshire, I have been able to find no soil that suited it, and although many changes were tried, the plants dwindled and all perished; nor have I found any species of Cyrtanthus succeed well in the soil to which I have access here. Mr. Rollison had equal success with Cyrtanthus angustifolius in his nursery at Tooting, near Mitcham.'

"'The recollection,' he adds, 'that Hippeastrum equestre, single and double, which will not exist in the soils to which I have access in Yorkshire, throve exceedingly with me at Mitcham, in Surrey, in the same soil that suited the Cyrtanthus angustifolius, and that all the Cyrtanthiform bulbs are disposed to rot in light earth at Spofforth, persuades me that wherever their cultivation is found difficult, a soil that is more disposed to set firm, and not to fall to pieces when turned out of the pot, should be substituted, with good drainage and cautious watering. The difficulty is to find a light soil which has a little tenacity. There is a yellow earth of that nature in which I have observed Erica cinerea thrive with much greater vigour than in black soil in the neighbourhood of the New Forest, which would perhaps suit the Cyrtanthi.'—See *Herbert's Amaryllidaceæ.*

"With respect to peat, Mr. Herbert says, 'I have lost so many bulbs by the use of peat at various times that I am generally fearful of using it. There is so much variety in the vegetable black earth of different places, that it should be tried cautiously.' By reverting to what we have said above respecting peat soils, in our general observations, some of the causes of these differences may be seen; but, after all, the cautious trial recommended by Mr. Herbert, is the best guide.

"Seed should be carefully saved from the best and most curious flowers, and when fully ripened, after having been hardened a little in the sun, should be sown in boxes of light rich earth, setting them in a sheltered sunny situation, but not under cover. This is usually done about the latter end of August or beginning of the following month; large sorts being covered to the depth of nearly an inch, and smaller sorts half an inch. A little water should be occasionally given when the season is dry, to keep the soil moist, but not wet. The seeds may be protected till they come up by a little covering of some kind of strawy material. Other sowings may be made in March, or the following month, the boxes being brought into southern exposures, when there is only the morning sun towards May.

"After Culture of Seedlings.—The young seedling plants should be protected in severe frosty weather, and when there is much rain, by means of mats and hoops, and a reed hurdle, or other contrivance, to break off the north-east winds. The young plants should likewise be kept properly thinned out, and perfectly free from weeds. When the stems decay, a little mould should be put upon them, to the thickness of half an inch. In the following summer, when the leaves decay, as about August, they should be planted out into nursery-beds, at the distance of two or three inches, according to the kinds. Some sorts require to be removed from these into other nursery-beds as soon as their tops decline, and set at six inches distance; or it is probably a better practice to thin them out to this distance in the first beds. After this they are to be managed as blowing plants. These sorts of roots blow at different lengths of time, after being raised, some in the first, some in the following year, and others not till several years afterwards.

"In all such plants a store of prepared pulp is laid up in the bulb each season, for producing the stems or flowers the succeeding season. It is clear, then, that the more pulp there is stored up, or, in other words, the larger and plumper the bulbs are produced, the stronger and finer will the stems and flowers afterwards grow. Now as flowering and fruiting exhaust the pulp, let every flower in the seedlings be pinched off in the early bud, if they offer to blow, while the leaves must be left on the stem to prepare pulp for the root store, and make larger flower-buds in the centre for after blowing. In this way finer and larger bulbs can be produced than in any other way. It injures many bulbs, however, to break the flower-stem, as we shall revert to under Tulips.

"Propagation by Stem Bulbs.—Some species, such as the Tiger Lily, produce on the sides of the top parts of their stems, at the inner base of the leaves, small dark coloured bulbs, or buds, if they may be termed so, from which young plants may be raised. The stem bulbs should be taken off in August, and, after being dried for a few days in the sun, ought to be planted out in rows in the same manner as the young offsets from the root bulbs.

"Improvement of Bulbs by Drying.—It is important to recapitulate here what has elsewhere* been stated, respecting the periodical activity and rest of plants, it being necessary for their permanent health that they should have intervals of repose succeeding to activity, no less than sleep is necessary to animals. In various processes of artificial management, the perfecting or extending this period of repose is found to be productive of very marked effects. By putting plants in a state of repose sooner than natural, they can be brought again into active growth sooner than their accustomed seasons; and by making it more complete than it can be made in a state of nature, the plants may be made to awake with greater vigour.

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* Alphabet of Scientific Gardening, p. 118.

"With respect to bulbs, their period of repose commences, as in other plants, with the withering of the leaves, and as complete repose cannot be induced when the stimulus of moisture is present, it becomes necessary to take the bulbs out of the ground. As soon then as the choice sorts of bulbous flowers are past blowing, and the leaves beginning to die off, the bulbs should be taken out of the ground, choosing dry weather for this purpose; and they should be gradually and thoroughly dried by spreading them out and turning them, to prevent the appearance of mouldiness or canker.

"It is also important to cut off the flower stems just before flowering, to place these in water, and blow them there, allowing the leaves, as already explained in the cultivation of seedlings, to remain for the purpose of nourishing the bulb. But it is said that the bulb will be apt to canker and rot, if the flower stem be cut down after blowing, while it is still fresh, and before it dies down.

"There is another principle, hitherto I believe overlooked by practical writers and practical men, for inducing a complete state of rest in the dug-up bulbs. I refer to the influence of light. Bulbs, like all underground vegetable productions, dislike the light, and hence, when bulbs are planted too shallow, they do not blow so finely as when deeper in the ground. Hence it is fairly inferred that light has, to speak physiologically, rather a sedative than a stimulant effect on bulbs; consequently, by placing the dug-up bulbs in the light, and not shutting them up in boxes and baskets, as most florists recommend, must induce a more complete state of repose. Besides, by carrying off the superfluous water from the stored up pulp, it tends to enrich its nutritive properties, and this also is best effected in the light, which promotes evaporation as well as decomposition.

"The natural period of repose for most bulbs is six weeks, or two months, but many sorts may be kept out of the ground several months, and some sorts admit of being kept out of the ground from the time the flowers and leaves decay till the following spring, as is often practised, to obtain a longer succession of bloom in the flowers. Bulbs of the coated or laminated kinds, such as lilies, should not be kept out of the soil longer than six or eight weeks, the summer flowering sorts being set at separate periods in the autumn, and in the beginning of the year, before the latter end of February, so as to produce a succession of flowers. With others of a more delicate nature, this method is also common, but they should have a dry sandy soil, in order to stand the winter without rotting, where there happens to be much wet, succeeded by severe frosts.

"When bulbs have remained in the ground longer than the proper period, so as to have struck out new roots, they should always be removed with balls of earth, as where this is not attended to they grow weak. On this account the exact period for removal should be carefully observed. It is necessary, on taking up the choice kinds of bulbous roots annually, to separate the offsets for increase, as well as to prepare the earth of the beds and borders afresh, to promote the fineness of the succeeding year's bloom. The inferior sorts of bulbous roots should also be removed every other year, or as often as their offsets are considerably increased; for when increased into large bunches, they cramp each other in growth, and produce small, ill-nourished flowers.

"PLANTING OUT AND AFTER-CULTURE.—With respect to the seasons for planting out bulbs, after proper drying, it is recommended as the best practice to plant the spring kinds in the beginning of the autumn, such as in the latter end of September, or beginning of the following month; and those of the summer flowering in October, or the beginning of November; and those of the autumn blowing in the latter part of July, or in the following month; too early and too late planting being equally to be avoided, as when put in too soon the flowers are liable to be injured by being too forward if the winter and early spring prove severe; and when delayed too long they are apt previously to exhaust themselves by forming roots. The offsets of bulbs should in general be put into the ground a considerable time before the periods of planting out the full-sized roots; those taken from coated or laminated bulbs mostly requiring to be immediately replanted. With respect to the disposal of bulbs in planting, the larger and more choice sorts require beds a little rounded, of three, four, or more feet in width, according to circumstances; the smaller sorts appear best in patches in the common borders, in clusters of three, four, or five together, according to their respective height. With the large sorts, one in a place is sufficient. The fancy sorts of bulbs, when planted in beds, are usually put in rows eight or nine inches apart, and from five to seven inches distant, in proportion to their height. Some prefer less room, but where a strong blow is required these distances are not too great.

"The depths of setting bulbs are in general according to their sizes or growths, as three or four inches from their upper parts, though some sorts will rise from a considerable depth, as six inches or more, and others from still greater, which has induced some persons to plant them to such depths as are sufficient to prevent their being injured by digging over the surface ground.

"Different methods are employed in planting bulbs, such as putting them in by the dibble, or in drills drawn by a hoe. The latter is in general to be preferred, as they are apt to be hollow in dibbling, while by placing them in a drill they may be gently pressed into the soil, and be perfectly covered up. When they are set in beds, the best method is to draw off the mould of a sufficient depth to one side, leaving the surface perfectly level, watering it a little in dry seasons, and then forming it into proper squares, placing a bulb in the middle of each, and covering them with the mould drawn off so as to leave the bulbs in an upright position. After the bulbs have been put into the earth, if the weather continue very dry, a little water should be sprinkled over the beds or other places, to forward their vegetation and prevent their rotting.

"Occasional protection will be necessary in raising the more choice sorts of bulbs; and before they appear, during the winter, the beds should be sheltered from too much wet, in order to guard against the effects of succeeding frosts. When they first present themselves above the ground also, they should have the protection of an awning of cloth, mats, or other contrivances at night, when the weather is severe; but these should not remain on in the day time when the weather is tolerable. Some sort of covering of the same sort is likewise necessary when they are in bloom, to shield them from the sun and rain, and continue them much longer in a perfect state of flowering."—Pp. 134—138.

The author then proceeds to give us lessons on the cultivation of the Tulip, in which the important parts are sound, but where anything is borrowed from others, he is not happy in his choice. Hogg may be one of the best to quote (of the old authors) on Carnations, but he is the worst on Tulips. It must here be remarked, however, that very few practical gardeners, even of the most experienced, knew much about florists' flowers till of late years; and there are not many who can teach the culture of them so well as some of the Spitalfields and Bethnal Green artisans and mechanics. The illustrations of the Tulip-bed, and other subjects appertaining to their culture, are very good. The catalogue of sorts with their prices, is of no service, as it forms no guide whatever to the quality, and many of those which from time to time prove faulty, are discarded every year. In attempting to give the properties of a Tulip the author fails altogether. The standard laid down by old authors has been exploded ever since 1832. The culture of other interesting flowers follow in succession; and the chapters on what are termed florists' flowers are evidently compilations, and those not from the best sources. The difference between corms and bulbs is explained, and a section devoted to their culture.

Tubers bring us to the Ranunculus, Anemone, Dahlias, &c. The two former are open to all the objections we have raised; the latter we must speak of alone, for the catalogue attached is the most extraordinary one we ever saw, the whole article on this flower being compiled chiefly from Sabine, in the Horticultural Transactions. Now, the late Mr. Sabine was so exceedingly curious in his notions of Dahlias, and his mode of labelling them, that he considered his label incomplete without the raiser's name; so that everybody who called on him was taxed for the raiser's name to any that were not already complete in that respect. The consequence was, that although nobody could boast of a larger collection of varieties, nor of so many raisers' names, one-half were wrong. In looking over the catalogue reprinted in the present work, which ought, with all its faults, to be in every florist's hands, we are struck with the singular mistakes. Scores of Dahlias are attributed to persons who never raised one in their lives to send out, and we are doubtful whether Mr. Glenny, who was successful, ever let out half-a-dozen, though there are no less than forty attributed to him. We mention this, because, independently of the name being strange to us as a raiser, the flowers are strange also, though we have now before us catalogues from 1833 to the present time. The fact induced us to ask rather an extensive grower, and he thinks he remembers in some publication suggestions for the names of Dahlias; and if real, instead of imaginary, flowers have been attributed to the author, it will be curious enough. We mention these things in the spirit of true criticism, and if Mr. M'Intosh were not a first-rate gardener, and, in some points, a first-class author, we should not enter so fully upon the subject. The culture of the Auricula, and other fibrous-rooted perennials, brings us from the flowers to the flowering shrubs, the section including which we shall reserve for a further notice hereafter.

In conclusion, we cannot but recommend the volume as a highly useful book to the amateur, as well as the professional gardener; for it is no disparagement to the class to say, Mr. M'Intosh stands high among the soundest and best of the practical gardeners of the kingdom, and whenever he trusts to his own knowledge, instead of depending on that of others, he is a very safe adviser.

THE STOCK AND WALLFLOWER.

Strange as it may appear, there is more of this plant cultivated than there is of any other, mignonette excepted, and yet there is less known about it. It is true that the growers of tens of thousands in pots, for market, and in gardens, for cut flowers, produce them, year after year, in high condition, yet none of them can satisfactorily account for the changes from single to double, or, rather, for the production of double Stocks and Wallflowers from the seed of single ones, the double ones being purely monstrous flowers, without organs of generation, or any indication of them. Originally, the Stock and Wallflower were considered of the same family, and were classed under the botanical name of Cheiranthus ; of late years, however, in the rage for splitting families, and multiplying genera, the Stock has been called Mathiola, and the Wallflower retains the original name. The separation of the Stock from the Wallflower was a work of modern days, and is recognised in the latest published Botanical Dictionary, which, however, also recognises one of the most vulgar errors of our forefathers. It was once supposed that, to procure seed that would produce double Stocks, it was only necessary to grow a single one among many double ones ; for they never troubled themselves with the fact, that the double ones had neither pistil nor stamens, and therefore adopted a supposition, without the least consideration of its groundlessness. Paxton and Lindley, in the Botanical Dictionary, have completely adopted the errors of their predecessors; for the following is their account of the Stock:—"This is a genus of old and well-known inhabitants of the garden. In order to obtain good double Stock-gilliflowers, Brompton and Queen Stocks, choice should be made of such single flowering plants as grow near many double ones." Now, we cannot too positively deny that the double have anything to do with the matter. The Germans have been so successful in saving flower-seeds, that we have very distinct shades of colour, from white to deep red, from white to deep purple, and from white to dark slate colour, and it is not uncommon for imported sorts of the annual Stock alone, to run into forty or fifty distinct characters, all tolerably true. The varieties or species (so called) mentioned in recent works, are as follows:—

Mathiola acaulis.—Hardy annual, red; blooms in June, and imported from Egypt in 1823.

M. annua.—Hardy annual, many colours; blooms in August ; imported from the south of Europe in 1731.

M. a. alba.—Hardy annual, white ; blooming in July, and supposed to be a variety of the same.

M. a. flore-pleno.—Hardy, red ; blooming in July ; supposed to be a mere variety of the same.

M. coronopifolia.—Hardy, purple; biennial; blooming in June, and imported from Sicily in 1819.

M. fenestralis.—Hardy purple biennial ; blooms in July, introduced from Crete in 1759.

M. glabrata.—An evergreen frame shrub, blooming white in August, of whose introduction no account is given.

M. g. flore pleno.—White and purple ; evergreen frame shrub, a double variety of the same, blooming in August.

M. purpurea.— An evergreen frame shrub, blooming in August, of whose introduction no account is given.

M. græca.—A hardy annual, blooming white in August, and introduced from the south of Europe.

M. incana.—Hardy evergreen, shrubby kind, flowering in August, and indigenous to Great Britain.

M. i. alba.—By a sort of contradiction to its name, a purple evergreen; shrubby kind, blooming in August; also British.

M. i. coccinea.—Hardy evergreen, shrubby kind, flowering scarlet, or rather crimson scarlet, in August; indigenous to this country.

M. i. multiplex.—A frame evergreen, shrubby kind, bearing a variegated flower in August ; indigenous to Britain.

M. livida.—Hardy annual, bearing a livid purple flower in July; introduced from Egypt in 1820.

M. longipetala.—Hardy annual, bearing a red or yellow flower in June; brought from Bagdad in 1818.

M. odoratissima.—A green-house evergreen shrubby kind, from Persia, bearing a blood-coloured flower in June; introduced 1795.

M. o. fragrans.—A green-house evergreen, shrubby sort, brought from Crimea in 1823, and bearing a blood-coloured flower in June.

M. oxyceras.—Hardy annual sort, from Damascus in 1820, bearing a blood-coloured flower in July.

M. parviflora.—Hardy annual, brought from Morocco in 1799, flowering purple in July.

M. sicula.—Hardy biennial, from Sicily in 1835, bearing a lilac flower in July.

M. simplicicaulis.—Hardy purple biennial, of whose introduction nothing appears to be known, flowering in July.

M. s. alba.—The same in all respects, but a white flower.

M. sinuata.—Hardy biennial, indigenous to England, bearing a dingy red flower in July.

M. Tartarica.—Hardy biennial, from Tartary in 1820, bearing a red or yellow flower in July.

M. tenella.—A hardy annual, from Cyprus in 1820, bearing a green or brown flower in July.

M. tortuosa.—A green-house evergreen shrub, from the Cape of Good Hope, introduced in 1816, and bearing a purple flower in July.

M. tricuspidata.—A hardy annual, from Barbary in the year 1739, bearing a purple flower in July.

M. tristis.—A green-house evergreen shrub, from the south of Europe in 1768, and bearing a blood-coloured flower in June.

M. varia.—The same in all perceivable points, introduced from the same place in 1820.

It is easy to perceive that many of these plants, though introduced from various countries, are very similar in habit and description; but the great divisions familiar to us in the present day are the annual, or ten-week Stock, which has been long known, with all its varieties; the Giant Stock, which is like the Brompton, and perhaps only a variety of it; the Queen Stock, and the German Stocks, all of which have been, perhaps, raised from the ordinary ten-week kinds. In short, almost everybody who professes to grow Stocks in large quantities for market, in pots, have favourites of their own, which it would be difficult to identify with any of the species we have given, although the list is the latest that has been published in Botanical works. With regard to the kinds now familiar at the seed shops, Hurst and MacMullen's catalogue contains the following:—New Emperor, scarlet; New European, purple; Scarlet intermediate, Purple intermediate, Prussian various, German various, Prince of Wales, Chamois Superb, Victoria, Giant Brompton, and Queen; so that there is no end to the distinctions. The most extraordinary fact with regard to the culture is, that they do come double from single seed, or rather from seed saved from single ones, and that without the slightest reference to there being any double ones near them, or in the same ground. Many are almost superstitious as to the period at which they are to be sown; and it has long been proved to our satisfaction that culture has something to do with it, because we have seen a packet, or rather packets, of seed divided between two people, one producing nearly all double, and the other nearly all single. The ordinary mode of sowing ten-week or annual Stocks is on a slight hot-bed; and when they are up to give them plenty of air, even by entirely removing the glasses in fine weather. Those who want them early in spring sow in the autumn: those for summer bloom are sowed in spring. We have no conceit about the particular period. Here they may be sown in March, April, May, and even June, and grow till they are large enough to plant out, giving them no more water than is absolutely necessary to keep them from flagging. When planted out, they should be watered in well, and then, being placed nine inches apart, they will only require to be kept clean from weeds, and grow until they flower. If you are choice in the purchase of your seed, you may, of the German Stocks alone, have forty very distinct shades of colour. The Prussian Stocks are not so numerous. In saving seed, select the single Stocks with the widest petals, and with five petals, if you can find them, which is not at all uncommon; but you may as well plant double brickbats as double Stocks, to influence the seed of the single ones you save from. The autumn-sown Stocks may be sown a month apart in the same way, for keeping in pots through the winter. All you have to do is to see them strong enough to plant into pots before the winter is too cold for them. They require no heat, but they are, in that young state, unable to stand much frost. Plant three in a pot if you fear the quality, that you may be able to draw one or even two single ones out, should there be such, and take out the weakest of them if they all run double. Among the best cultivators of the biennial Stocks, we have known some who grew them in pots for sale, and we have seen hundreds in frames growing well, and nearly all double. Of all these we have made various inquiries, and it was evident that while they were in the seed-bed they partly starved them if for planting out in the open ground; but, if for potting, they put them out rather small than otherwise, and starved them there; that is to say, they kept them all the early part of their career what we should call rather short of moisture. But we must treat of Stocks in the regular way, beginning as we have done with the annuals, and proceeding with the others. We cannot help, however, looking at the difference between the Stock and the Wallflower; and when we observe the great difference between the growth from seed of the one and the other, conceding the propriety of separating the families. Let any one grow an acre of seedling Wallflowers, and a double Wallflower is a perfect novelty, although there is such a similarity in the make of the flowers, and especially the double ones, that we marvel at the discrepancy in the raising from seed. We have grown both largely. We can safely say that we have saved Wallflower seed in the best way we knew of, that we have begged seed of others, bought seed, and, before we had quite made up our mind upon the matter, grown one single among fifty double; but we can safely say that, out of thousands, perhaps millions, raised from year to year, for more than twenty years, we never obtained a dozen double ones. On the contrary, we have grown some of the biennial kinds of Stocks, and twice in our time we have totally lost a sort for want of seed, the entire number coming double. Much has been said and written about change of soil and selection, yet we have grown ourselves, year after year, the finest Stocks, and never found them degenerate, unless it be decided that double Stocks are degenerate varieties. Many persons are famed for a particular kind of Stock, grown many years running on the same soil, but always proving good, if it be allowed that double Stocks are good. To go back, however, to our favourite Stock, we will begin with the ten-week, or any other of the annual kinds, from the sowing of the seed to maturing the plants.

SOWING THE SEED.

Choosing rather to begin with autumn sowing for the purpose of obtaining early spring blooms, we will sow the annual Stock in seed pans or boxes for a small quantity, or a one-light box or more for a large quantity. Take peat and loam for the soil, level the top, and sow the seed very thinly; for crowding seedlings is bad, and drawing some out when too thick only disturbs the others. Sift a little fine mould over the seeds, to cover them and no more, and the months we should choose for this would be August and September, part in each month. Keep them under the glass; for if they are sown in pots this should be attended to. When they are up they should be protected from the heat of the mid-day sun. Refresh them with water to prevent them flagging, and in a few weeks they will have six leaves. Fill forty-eight sized pots with half loam and half peat, and put three or four in a pot within an inch of each other, near the centre of the pot. The object of this is, as already explained, to be able to draw out the two weaker of the lot, to leave either only one or two, as soon as they indicate their single or double quality; because, when all are pretty near the centre, a single one left will do, and two will not be much worse. These pots must be put into a frame and covered up as winter approaches: fill up the frame, or sink it so that the plants may be near the glass. The frost must be kept from them by covering up, and not by any heat artificially given. They will grow all the winter; and very early in the spring, it will be seen whether they will come double or single. As soon as this can be ascertained, carefully remove the single ones, and well water the others, which can hardly be too much pushed on for your early bloom. The pots should stand on a dry bottom; for wet, or even a defective drainage, will greatly weaken them.

BEDDING OUT.

By the beginning of May they will commence developing their flowers, and whether to be kept in pots, or planted out in beds, they will do well. If they are to be put out into beds, the balls of earth must be turned out whole, so that the plants shall not suffer from removal. Water them in so as to close the earth about the balls; place them nine inches apart in the beds, or see that they have plenty of room in the borders; for on the room they have, presuming the soil to be good, depends entirely the future welfare of the plants, and the strength and size of the blooms. If they are intended to bloom well in the pots, reduce the number to two, or even one each, and shift the ball of earth into twenty-fours, or thirty-twos, keeping the plants as much as possible in the middle, which can be done by repotting the ball rather on one side, so as to throw the Stocks in the centre. Keep to the same loam and peat, though even the ordinary garden soil will grow Stocks; for the loam and peat bring them in greater perfection and finer colour. In the spring sowings nearly all the same observations apply, and they may be put out the end of May, the end of June, and the end of July, to succeed each other; for Stocks, although some time in perfection, lose their colour after the main spikes have bloomed, and are soon the worse for it. The bloom of Stocks may be prolonged by cutting away the decaying flowers, for it induces side-shoots; but still the flowers get speckled, ragged, and undefined. If they are sown in a hot-bed in spring, they come nearly as forward as those kept over the winter, but rarely so handsome. The best way is to sow them under a light, but not in heat, to cover them from heavy rain. Shade them while young from the heat of the sun; and, when they are large enough, plant them from the frame into the places they are to grow in: they are later, but, upon the whole, stronger and finer, than when too much nursed. In this case they may be sown any time after the beginning of April; so may the annual Stocks be sown in the open ground, on a border of good earth, and any time in April: they will not come up until they can bear all the weather. Some persons have been in the habit of sowing the ten-week Stocks, broad cast, in the bed they are to grow in, and, when they become large enough, drawing them out, to thin them to nine inches or a foot apart. The objections to this are, that the Stocks are not left in even rows; for this is next to impossible. Those drawn out generally run more double when carefully taken away and planted. The best way is to water the bed well first, and in half an hour you may draw them out without damaging the roots. It has been thought by many that the check which Stocks get under the transplanting system are beneficial in producing the double flowers; but, generally speaking, we think high culture induces it. Certain it is, we never saw a self-sown Stock come double when left to bloom in the place in which it came up; and some kinds are very apt to come single, and cannot be prevented. Yet we feel assured that it is not in any case produced by the mode of saving the seed, but chiefly by the culture. It is worth mentioning that an old grower, not far from Richmond, many years since famous for his double Queen Stocks, used to throw out all determined tap-rooted plants, and call them single. If this be really an indication which we are not yet convinced of, it is worth knowing, and, whether it be or not, it is worth trying.

BIENNIAL KINDS OF STOCK.

These should be sown in May or June, and as nearly as possible that time in the next year they will flower. The months mentioned as those in which they bloom, supposes them to be sown at the ordinary time for biennials, that is, Midsummer, or rather later. These are best sown in a good sound border of loam and peat, though the soil of a kitchen garden not fresh dunged will do for them. Here they may remain until they have made some considerable growth, and from thence taken to where they are to bloom, whether this be in beds, borders, or pots. They must, if potted, be only one in a pot, of the forty-eight size; and in the spring, all that indicate double flowers should be transferred to size twenty-four pots, as they will grow very much, and the flowers be greatly assisted by the additional room. But the Giant Brompton, and some of the large kinds of biennial Stock, are much too large for pots, and will grow, on good ground, three, and occasionally four, feet high. They should be planted out time enough to establish themselves in the ground before the winter sets in, and are only fit for extensive gardens. Some of the biennial white Stocks are dwarf and handsome; but Stocks, unlike almost every other flower, are never worth saving from bad sorts; the fine ones seeding equally free; and the disappointment in growing bad Stocks is so great, from the extent to which it is grown, even in small gardens, that less tricks are played with it than any other. The only danger is, that where a new sort comes up, and is talked of much, the seed of old ones, not a quarter the price, is sometimes imposed on the seed shops, and from them will go to their customers; but respectable houses endeavour to guard against that by dealing with none but people they well know, or growing it themselves. When the Intermediate Stock first came before the public, it was dear, and certainly some were disappointed; but, generally speaking, even the German kinds of Stock may be pretty well depended on, and will repay the grower for his pains, if he has but room to cultivate the numerous shades of colour. The frame and green-house species of Stock are not worth the trouble of growing.

STOCKS FROM CUTTINGS.

The biennial Stocks are well worth propagating from cuttings, and they produce flowers in a much more dwarf state. These are taken from the side shoots and come soon after the bloom; indeed, if left on the plant they would bloom. When taken for cuttings, they should be stripped off with part of the heel, or cut very close to the plant, and placed under a hand-glass, but they should always be taken as soon as they are large enough to handle well; and if they should indicate bloom before they have grown to any size, which they will sometimes, it must be pinched out as soon as you can get hold of it. When they have rooted well, they may be planted out the same as seedlings. The only object in raising from cuttings, is to perpetuate any really strange kind; for the seed is far preferable, unless it be on that account.

WALLFLOWERS.

There is a kind of German Wallflower, the seed of which is now imported freely, of which many come semi-double, of singular colours and extraordinary habit. They are well worth cultivating, and only require sowing in the open ground, planting out, when large enough, where they are to grow, and saving the seed for another year. Some of these are very nearly double, but they have nothing about them like the ordinary Wallflowers, for the double, or rather the semi-double ones, have the organs of generation, and seed freely; therefore these hardly come under our present notice, except that as they are called Wallflowers, the simple hint now given may be useful. With regard to the others, which are regularly raised from seed from the single varieties, and the double ones of which are raised from cuttings, a few observations will suffice. The seed should be sown in June or July, and when they are up, they should be watered as often as required. As soon as they are two or three inches high, they should be planted out in nursery-beds, or where they are to remain for bloom. They will flower very early in the spring, and want nothing in the way of attention all through their culture, but keeping clear from weeds.

WALL-FLOWERS FROM CUTTINGS.

The double Wall-flowers, whether the dark Blood Wall, as it is called, or the Golden, or the pale Yellow, are of a habit that is highly favourable for propagation. When the bloom is over, they require watering quite as much as when coming into flower; and it is a very good plan, when the flower is declining, to plant them out in the open ground, give them plenty of water, and pick off all the remaining flowers, as well as any that may be coming from side shoots. Soon after they have been so planted out, they will throw out shoots all over the stems. These are to be taken or stripped off as soon as they are large enough, and planted all over the space that can be covered with a hand-glass, not more than an inch apart. The soil must be rich and light, but not fresh dunged; and when placed therein and well watered, the glass must be pressed down close to exclude the air. Where this is done on a smaller scale, pots may be filled with the proper soil, loam, peat, and leaf mould, and the few cuttings placed away from the edges, so that a goblet or small bell-glass may be pressed down within the rim. In either case the cuttings will require occasional watering and shading until they have struck, when they may be potted, one in a forty-eight sized pot, and placed still in the shade, on a dry surface of ashes, or gravel, or slate, or paving of some kind, until the end of September, when they may be put into their winter quarters, which should be a common garden-frame and light; but they should only be covered of nights and in hard weather: it is impossible to give them too much air. Here they may be kept until they flower, after which, if they are to be grown another season, they must be shifted to pots of thirty-two to the cast, as soon as the bloom decays, and then all their shoots must be allowed to grow, instead of being taken off for cuttings. It is, however, generally the case that the plants, though they grow larger, bloom smaller flowers; and therefore Wall-flowers, like Pinks and Pansies, and many other subjects, are annually raised from cuttings. These remarks, however, only apply to the common, well-known sorts of double Wall-flowers. That there are many different species, having different habits, will appear from the fact, that no less than ten were introduced in 1573; but these differ mostly in colour, and only slightly in habit. For instance, Cheiranthus Cheiri, orange colour; C. C. ferrugineus, brown; C. C. flavescens, yellow; C. C. flore-pleno, double yellow; C. C. grandiflorus, yellow; C. C. hæmanthus, blood colour; C. C. maximus, yellow; C. C. patulus, yellow; C. C. sanguineus, dark brown; C. C. serratus, yellow; C. C. thyrsoides, and C. C. varius, variegated. Now, all these were introduced from the south of Europe at the same time, and among several of them the distinction was certainly not worth noting. They are all frame varieties, too, and require the culture we have already pointed out. There are only two in the modern works noticed as hardy, C. fruticulosus and C. Dubius, or ochroleucus; one British, the other Swiss. The following are green-house plants, but nearly all the double kinds are much more deserving the name of hardy than one-half the plants so designated. The green-house species (so called) are—

C. alpinus, yellow; from the south of Europe, 1810.

C. arboreus, yellow; from Egypt, 1827.

C. firmus, yellow; from the south of Europe, 1816.

C. linifolius, purple; from Spain, 1815.

C. mutabilis, yellow and purple; from Madeira, 1777.

C. m. longifolius, white and purple; from Madeira, 1815.

C. scoparius, white and purple; from Teneriffe, 1812.

C. s. æruginosus, rusty colour, from Teneriffe, 1812.

C. s. chamæleo, yellow and purple; from Teneriffe, 1812.

C. semperflorens, white; from Barbary, 1815.

C. s. frutescens, white; from Teneriffe, 1815.

C. tenuifolius, yellow; from Madeira, 1777.

Any or all of these may be cultivated in a similar manner to the previously-mentioned frame sorts, except that, being rather more tender, they must have green-house instead of frame protection; in all other respects similar. There are, independent of the species already mentioned, some novelties which may be called garden varieties. Nevertheless, we find particularly noticed, Cheiranthus Cheiri hæmanthus, blood colour; C. C. purpureus, said by Paxton and Lindley to be a stove variety, but perhaps a misprint; and C. C. purpureus variegatus, purple. Upon the whole, whether for their fragrance, their early blooming, or their easy culture, we hardly know a more general favourite than the Stock and the Wall-flower; nor one so much improved by the florist, and increased in varieties.

ARBORETUMS.

BY JAMES GRIGOR, OF THE NORWICH NURSERY.

The work of collecting and arranging certain families of ligneous plants has of late years been attended to, in many instances with the happiest effects; but the formation of an Arboretum, as an indispensable requisite to every park and pleasure-ground, is not yet recognised throughout England. Our royal palaces even are without them: not that we are to look invariably to such places as models of taste and improvement; for, taking a retrospect glance at what has been done in this respect, we find that Arboretums have been advanced chiefly by certain private individuals, and, in some instances, by those whose means almost forbade them to indulge in this comparatively expensive pursuit. Old Gerard was a planter of "faire trees," which flourished somewhere on the present site of Ely Place, in Holborn; Raleigh had groves "of much varietie and great delight;" Tradescant had his seat at Lambeth, and an Arboretum there; Compton, the Bishop of London, devoted a considerable portion of his time to the rearing of curious exotic plants and trees, at Fulham; the good John Evelyn, at Say's Court and other places, had his beloved trees; and several other individuals during the seventeenth century made collections of those interesting objects, which, so far as "wicked hands" have permitted, remain to this day the most noble and interesting relics of bygone times. The last and present centuries have had many promoters of Arboretums, individually and unitedly; but perhaps the greatest stimulus which has been given to this work, has been through the London Horticultural Society, whose well-conducted establishment at Chiswick affords the best opportunity of seeing and studying all that is desirable in this department of Horticulture. Who, for instance, can enter that garden without being struck with the beauty and variety of the genus Cratægus; or, if he has the means of gratifying his taste, without forthwith resolving immediately to commence the formation of a collection of this charming tribe of plants? Yet the Cratægus forms only one of a hundred classes of plants in some respect or other equally attractive. Then how is it that Arboretums are not more universal? Unquestionably because attention has not been directed sufficiently to their great utility, and to the endless sources of pleasure they are capable of affording.

An Arboretum, properly formed, is just as interesting to the naturalist as are collections of beasts, or birds, or insects. Here the members of a certain family are grouped together; and the first thing which will strike the observant is the time of the budding and leafing of the several individuals in this group; the size and colour, and various forms of the leaves, will then arrest his attention; and the decay, the colour in decay, and ultimate falling off of such leaves, will afterwards afford matter for observation. The relative growth of each plant will thus be easily determined; for, being all in one neighbourhood, it is to be presumed that difference of soil will not affect them in this respect. Hence it will readily appear what particular species is adapted to certain situations, whether as a fast or slow-growing tree, a tree with a bushy or open habit, or one which retains its leaves long, or casts them off in early autumn. But to the botanist, an Arboretum performs other and most important offices. Classified as the trees are, he sees at once what are really distinct as species, and what are entitled to be considered merely as varieties of such species. Besides, collections such as these are living records of what has been determined in botanical science; and every real addition to such collection is a step towards the completion of a perfect representative system in the vegetable world, at least so far as hardy ligneous plants are concerned.

But what shall be said of the beauty and grandeur of such assemblages? The Rose, Pyrus, and Cratægus tribes alone, form a group the loveliest which ever sprung from the earth; and as to stateliness and grandeur, where are such types to be found as in the towering Pine and strong-armed Oak? And, in case any one should reject simple appearances—mere flowering shrubs—do not many of the former portion of plants array themselves afresh in the mellow, yet brilliant hues of autumn, returning a thousand-fold for the care exercised over them? The latter class, again, whilst affording the best subjects for the graphic pencil of the painter, is so full of utility, that we are really indebted to it for the most of the conveniences of domestic life.

Yet Arboretums do not end here—not in the mere pleasure or indirect profit they may convey to the particular possessor. Their influence extends over a wide space in the neighbourhoods where they are formed; and in some instances, no limits can be fixed to the effect they have. The garden at Chiswick, already alluded to, has in a wonderful degree helped forward the latent spirit for collections of trees and shrubs throughout Britain and the Continent; and the Arboretums of individuals, according to the access the public have had to them, have been in a like ratio successful in this respect. The late James Crowe, Esq., F.L.S., of Lakenham, near Norwich, had one of the best assortments of willows in Britain; and though it is at least thirty years since this *Salictum* was dispersed, the influence it had is still very apparent in the fine specimens of this tree to be found throughout the East of England. In like manner is it with other things in the same quarter.

The impulse given to Botany and Horticulture by Smith, Hooker, and Lindley, all Norwich men, seems to be yet apparent in the Horticultural Society of that city, which in every respect ranks next to those of London.

The more comprehensive an Arboretum could be made the better; but, as it is really a difficult matter for many to keep up a complete collection of trees and shrubs, it is therefore thought that a plan might be devised which would more easily and effectually serve the purposes in view. Suppose that twenty or thirty amateurs, in various parts of the country, readers of this Magazine, were to engage forthwith to commence an Arboretum, taking twenty or thirty genera of trees and shrubs, each individual selecting two species, either of which he would agree to bestow his attention upon. Let each individual communicate his choice to the Editor of the Magazine, and, after a little arrangement and concession, the thing is done. The benefit of such a compact is too apparent to require being enforced. Turning, for example, to Loudon's "Arboretum," vol. iii. p. 1404, it is stated that the Ulmus glabra vegeta, or Huntingdon Elm, "is the fastest grower, and produces the best timber of all the Elms." Now, amidst our doubts on this point, let us suppose how easy it would have been to have written to the person who undertook the charge of the *Ulmarium*, as suggested, with the view of at once settling the question. His answer would have satisfied us respecting the growth of the tree, and if duplicates of all his Elms had been planted, a decisive answer might have been had also respecting the quality of its timber. The Elms are a most important race of plants, so are the Oaks; and with regard to the Pines, it has been lately discovered that a variety of one of the common kinds, which we have been in the practice of neglecting, is all-important, both as respects its merits as a landscape ornament, and affording a most durable description of timber. The Limes, again, especially in the sheltered and softer parts of park scenery, where their green and leafy spray forms the most grateful of summer umbrage, ought to be more extensively cultivated.

It is to be hoped that in the formation of public pleasure-gardens, which Government has shown every disposition to establish all over the country, advantage will be taken of the opportunity thus afforded of introducing regular Arboretums; and to enable all classes to enjoy themselves amidst a profusion of choice trees and flowering shrubs. Be this as it may, it is to be hoped that amateurs who are in easy circumstances, and have time at their command, will consider the plan suggested, and immediately set about the formation of such desirable undertakings. Ladies, too, having royalty as their example, would find such novel employment exceedingly interesting; and for them, the Rose, the Rose-Acacia, the Pavia, Ilex, Ribes, and others of a similar habit, may be mentioned as suitable plants to commence with.

HORTICULTURAL NOTES.

Hardy Brocoli.—The past winter, for we hope it has passed, has been more trying to plants than many we have experienced, and if it do no other good, it will have shown us the difference between hardy and half-hardy subjects, in some very important families. We speak not of things which have survived in one place, and been killed in others, but of solitary plants, which we have seen among thousands of dead ones on the same acre of ground unprotected. We have seen a piece containing a large number of Brocoli plants, rotted to the core, and here and there a solitary plant equally exposed, without hardly a seared leaf. Let not the possessors of such plants fancy they have lost much by the frost, they should treasure the survivor as a hardy kind, and save its seed uncontaminated by the brassica tribe in its neighbourhood, even the approximation of any should render it necessary to cover it with a tent of muslin or thin canvass. As, however, there may be some which have survived, stir the earth round them all, plant other crops in the ground, and as these heads of flowers rise, it will be seen which have any claim to distinction on that score. If the bloom come up sprouting, instead of close, it may be a valuable sort of sprouting Brocoli for all that; if it come up handsome it will be better, but before they arrive at that state which can be determined by the blooms, it can be easily decided whether it be worth saving or not. Let it be remembered that nothing can be more desirable than a kind of Brocoli that will stand a winter like this has been, and if there be anything like free growing in sprouts, or handsome growing into a head, let nothing deter the grower from so covering it, that it cannot be injured by fertilization from others of the cabbage tribe, and save the seed like so much gold. We do not recommend people who have lost but few, or who have rows in one spot still growing, but simply those who find among a large piece of exposed Brocoli, a sound uninjured plant or two that hereafter show they are worth preserving.—*Gardeners' Gazette.*

New Pelargoniums.—The following is a correct list of the Pelargoniums which have received prizes at the Horticultural and Royal Botanic Societies' Exhibitions, from May, 1841, to July, 1844. It will show how few obtain any distinction out of the thousands annually raised, and of that few, how many disappear altogether. In May, 1841, at the Horticultural Society were Gaines' Rising Sun, Catleugh's Prince of Waterloo; in June, Foster's Favorite, Garth's Queen of Fairies; in July, Wilson's Enchantress. In May, 1842, were Garth's Symmetry, Gaines' Amulet; in June, Foster's Sultana, Sir R. Peel, Nestor, and Sunshine, Beck's Leonora, and Meteor, Bosset's Model of Perfection; in July, Foster's Lord Chancellor, and Actæon, Pamplin's Count d'Orsay, and Prince of Wales, Garth's Constellation, and Gaines' Duchess of Sutherland. There was at this time a Seedling-testing Society, whose prizes were awarded during this month as follows, viz.—To Foster's Sultana, Actæon, Flambeau, Milo, and Eros, Garth's Constellation, Pamplin's Prince of Wales, and Sir Isaac Newton. To this date trusses only were shown. The following were exhibited as plants:—In May, 1843, at the Horticultural Society were Beck's Zanzummim, and Susanna; at the Royal Botanic, the above two, and Theresa, Foster's Zanzummim, and Hybla; in June, at the Horticultural, Foster's Phæon, Duke of Devonshire, and Robustum, Lyne's Princess Alice, Ingram's Corinthian; in July, at the Horticultural, were Foster's Psyche, and at the Botanic, Pamplin's Lord Nelson. In May, 1844, at the Horticultural, were Foster's Dr. Lindley; at the Botanic, Beck's Master Peel, Lurida, and Chastity; in June, at the Horticultural, Foster's Sir J. Broughton, and Exactum, Hoyle's Titus, Beck's Desdemona; at the Botanic, Foster's Orion, and Miss Peel, Cock's Hector; in July, at the Horticultural, Gaines' Duchess of Leinster; at the Botanic, Beck's Aurora, Silverlock's Emperor Nicholas, and Staines' La Polka.—*Gardeners' Chronicle.*

Sowing Exotic Seeds.—A convenient plan to adopt is to take shallow pots, about six inches across, *well drain them*, and fill to within about an inch of the top with fine soil, consisting of peat and loam, the latter preponderating, both tolerably dry, and with sand enough intermixed to make the whole appear *sandy:* this should be gently pressed smooth in the pot, and marked into four divisions; a portion of each packet of seed, properly labelled, is then to be sown, either in one, or in two of these divisions, according to the quantity of plants required; selecting seeds of nearly equal size to be sown in the same pot, in order that the same depth of soil as covering may be proper for all. The labels should be placed close together in the centre, exactly facing the division in which the corresponding seeds are sown. The pots should be placed in a *mild hot-bed*, and the soil covered and shaded so as to prevent its dying, by using a little clean moss, or something equally effectual. The least quantity of water that will suffice to keep the soil from getting dry will be found most desirable; the covering and shading will, in a great measure, prevent dryness. Avoid steam, by frequently airing the frame, and when the seedlings are fairly up, transplant them into small pots, or prick them out into larger ones, as may be most convenient.—*Gardeners' Journal.*

The Properties of Carnations.—Mr. Bates and Mr. Glenny, the two individuals who have discussed, and differed upon, the perfection of a Carnation, have come to the conclusion that both are right. The principal objection of Mr. Bates was, that Mr. Glenny's standard was not likely to be attained; that in fact it was not in the nature of a flower to attain it; whereas Mr. Bates's standard could be attained, and had occasionally been reached. In a personal examination of the various grounds for each of their opinions, not long since, both these gentlemen came to the conclusion that Mr. Glenny's standard would be the most beautiful, *if it could be ever reached;* and Mr. Glenny showed that the only difference between them all through the piece, had been that he had gone all the way with Mr. Bates, but when Mr. Bates stopped, Mr. Glenny went on further. Mr. Bates has been elected a judge of the Metropolitan Society.

Achimenes pedunculata.—This plant, though handsome in its flowers, has usually the disadvantage of growing tall and straggling. Cuttings, taken off and rooted, and then grown three or four together in a pot, are said to lose much of this undesirable habit, and to form dwarf, bushy plants, with larger and superior coloured flowers. Cuttings taken off at intervals through the season will keep up a supply of blooming plants.

Rhododendrons.—The late severe winter has tested the comparative degrees of hardiness in the different varieties of hybrid Rhododendrons. The crosses between R. ponticum and R. arboreum, such as Smithii, &c., are to all appearance quite dead; but possibly they may again shoot up from the bottom. Those raised between R. Catawbiense and R. arboreum do not appear so much injured in either wood or foliage; but, on opening the blossom buds, the embryo flower is found to be destroyed. The varieties raised between R. maximum and R. arboreum are apparently but little injured; and those between R. caucasicum and R. arboreum still less; so proving the two latter crosses to be considerably the hardier, and therefore best adapted for out-door cultivation in this country. [The hybrid called Alta Clerenee, has proved with us as sound and hardy as any of them, and the place not a little exposed either.]

PRACTICAL GARDENING.

OPERATIONS FOR JUNE.—THE FLOWER GARDEN.

This month is one of the busiest in the year in a well-established flower-garden ; the business of taking up those which have gone past their prime, tying up those which are advancing, and planting out the various kinds which now require it, comes pressing on all at once, and every attention is called for on the part of the florist. Before we proceed further in regard to directions, we ought to remind the amateur to read last month's operations very carefully, to do all that has not been done and can yet be done ; although we must of necessity repeat some of the directions here. All the tall-growing flowers that require support must be carefully tied to stakes ; subjects which have done blooming must be cut down, or taken up, or otherwise rendered sightly. The too vigorous branches of flowering shrubs must be shortened, grass must be kept mowed, verges must be cut smooth at the edges, weeding and clearing beds and borders, watering all the pots and plants that have been put out, and otherwise attending to the routine business of the garden, are matters of course. With regard to especial subjects we will commence with—

Dahlias.—The planting out of those subjects goes on this month as much as last, and many delay their main collection for that purpose, limiting their May planting to a select collection for early flowering, and not trusting too much to one season. We have already directed the planting out, and the system that would do for last month will do for this. The plants that were put out last month, as well as those now planted, must be tied up to their stakes, which we directed to be stuck in the ground before the holes were made for the plants. As they advance, other stakes may be put in round the centre one, in the best places to keep out the plant ; or they may be formed into a straight row, on which the plant may be fanned out. In either case it will not alter the first step, which is to fasten them to the centre stake, and afterwards to examine the ties, to see that no branch is pinched; for it frequently happens that the ties are not sufficiently loose to allow the stem to swell, and the tie makes a notch, which causes the whole plant to break down at the part, and thus the bloom is lost for the season, besides making a gap which is not easily filled up. The watering of the Dahlia should be effectual, and no oftener than is absolutely requisite ; it should be done after the sun is down, and all over the foliage, as well as all over the piece of ground they occupy, soaking it as completely as if it were a heavy rain, and not repeating it afterwards for days. The plan of watering at the root of the plant, and nowhere else, and of repeating this frequently, is altogether bad; it leads to sudden alternations of wet and dry, causes insects to be more abundant, and in a very dry season gives a check which the plant feels the whole season, or at least till the longer and more dewy nights of autumn come to their aid. Let the numerous plans for destroying thrip and earwigs be put into requisition ; put small pots on thin stakes ; put reeds, bean stalks, and other tubular contrivances, all about the plant while it is small ; have these blown into salt and water daily twice or three times, and the pots examined, that these pests may be got rid of while the plants are young. It is of the most vital importance that they be got rid of before the flowers come to harbour and feed them, for they will completely destroy every one for exhibition.

Pinks are rapidly rising for bloom ; remove every stem from the plant but the one that is required, and leave only two, or at most three, buds on each stem to choose your flowering one from. Some Pinks are such vigorous growers, such large flowers, and they so double, that four or five blooms might be allowed to come forward; but, in a general way, one or two, and they the best, are all that should be left. The stems, as they advance, should be tied loosely to small sticks, and as they are beginning to open they should be shaded from the violent heat of the sun. As they begin to swell, tie a piece of worsted or bast matting neatly round the middle of the bud, and tear down the calyx at each division to the tie ; place a bit of card with a hole in the centre round the bud, so that it shall form a sort of resting-place for the back petals, which as they are pushed out should be brought carefully down to the card. The five or six or more large guard petals should be placed to form a circular dish, as it were, for all the others to lay on ; the next large petals should be brought down, one over each place where the under ones meet and fold over each other, and so the second row hides the joins of the first or large row ; the third row should be served in like manner, and hide the joins of the second; and the rest should form a crown, as it were, to the whole. A full Pink will sometimes form half a globe, and make a very pretty object. Those flowers which are so managed while they are growing, require very little trouble when they are cut for show, for the petals keep naturally in their places. It will be seen that the object of tying the buds of the Pinks half way up, is to prevent the petals while swelling from splitting them; for if the pod be split down to the sub-calyx, as it is called, the flower is disqualified, which would throw out a whole stand or collection, at any respectable exhibition. Towards the end of the month the side shoots may be pulled off to do for cuttings, or pipings, as they are called. The lower portion of leaves should be stripped off to make room, as it were, for putting them into the ground; but it has been the custom for years to shorten all the other leaves, a custom better honoured in the breach. These cuttings should be put out in a shady border, with a hand-glass over them, well watered, and they will themselves strike; but some who do these in large numbers, prefer making up a slight hot-bed, with three inches of loam on it, and striking them there. It is considered that they root quicker if shaded, the bottom heat being of some assistance: it is, however, unnecessary. They must be freely watered; and if not in the shade, they must be artificially shaded. Some mix up loam and dung almost as thin as mud: at least, they so completely soak it, that the pipings, as they are called, can be stuck in without any help but the thumb and finger, as fast as possible, and the soft stuff closes about them of itself; the hand-glass also sinks into it, forming a complete air-tight covering, which we have known frequently to remain till the whole had struck, water having been lavishly bestowed all round outside of the glass, and scarcely a single piping has missed rooting and growing.

Auriculas.—Those which are not seeding must be kept from the heat of the sun; others which are going to seed must be watered, and have all the weather; but to prevent the heat from distressing the plant, by drying the fibres, through the pot, the pots should be sunk in ashes or saw-dust, or some other medium by which the sides of the pots may be kept cool; those which are not seeding are better in a box, where they can be kept from violent falls and too much wet, and also be screened a little from the wind. The dead and dying leaves must be picked off; offsets, which are large enough, may be taken off, but generally this will do best at potting time.

Pansies.—The continuance of the bloom of these flowers can only be ensured by a succession of cuttings, which should be constantly taken off, the side-shoots being the best for this purpose; and, by looking often to the plants, these are to be found sufficient for all purposes. Those which were in perfection early last month will have passed their prime by this month, and there are many ways to make them come to good account. Mr. Fynlaison, of Kincardine, cuts them close to the ground, and puts some earth on them; by which means young shoots come out in abundance, and are rooted so that they have merely to be separated and they make excellent plants. Those in good condition should be shaded, that the flowers may be prolonged; they should also be picked off when they begin to fade, as well as when they come imperfectly, for every flower that is allowed to perfect itself, weakens all the successors. They should be freely watered, in the evening, over the foliage, as well as all over the bed.

Carnations and Piccotees.—These generally require attention as to placing them, so that vermin may not be able to get at them, and where it will be convenient to water them. When they throw up their flower-stems, they must not be allowed to grow more than one to a plant, unless in a few instances,—where a flower is large and inclined to fulness, and when it can only be checked by giving the root more work. Some flowers are so full and double as to be inclined to burst, and on that account want different treatment. The general plan is to take away all but the strongest shoot; and then, as soon as the buds are developed, and they can be laid hold of, they should be reduced to two or three, and these should not be too close together. The earwigs are sad enemies to these plants, externally, and the wire-worm is the greatest plague within the pot; both are destructive in their way: the earwig, if it gets into a flower, bites off the small tender bases of the petals, and a fine flower by these means is destroyed in a night; the other attacks the root, and works its way up the centre to the heart of the plant. To get rid of earwigs, the pots are generally placed on a stage supported by legs or props which stand in water; with regard to the wire-worm, if a plant flags, the enemy is at its root, and should be found, as the only means of saving the other plants in the same pot. If any of these plants advance too fast, those which are the most forward should lose their principal or forwardest buds, as the only means of throwing them back; otherwise the lateral-bloom buds are taken in preference, and thus they may be regulated in a small degree. This month they may have all the weather; but if there be not refreshing showers, they must have water, not to keep them constantly wet, but to prevent their getting dry.

Annuals on the borders where they have been sown to bloom, must be thinned, so as not to crowd one another; and all vacancies may be filled up by plants of any kind,—either the tender plants from the frames, or those from the patches or beds. All that are now planted out from the late sowings will make a complete second season; and Balsams, Cockscombs, Mignionette, Sweet Peas, Lupins, China Asters, Nemophila insignis, Calliopsis of sorts, and other subjects brought forward in pots, will be found useful in finishing off the borders.

BIENNIALS and PERENNIALS may still be planted out. The Sweet William, Canterbury Bell, both the pyramidalis and dwarf kinds, and many others, may be still carefully moved, where they are growing near the spot, and of course those kept in pots may be turned out even while in bloom.

DOUBLE WALL-FLOWERS may be propagated. As soon as they are out of bloom, they should be either placed in the shade in their pots, or turned into the open ground and well watered, to induce growth. When the new shoots are an inch and a half or two inches long, they may be stripped off and placed in the ground, under a hand-glass, where, if shaded from the hot sun, and well watered, they will soon strike root.

ALL KINDS OF BULBS not yet taken up, and which are to come up at all, should be attended to this month. CROCUSSES and EARLY TULIPS, HYACINTH and NARCISSUS, CYCLAMENS, EARLY RANUNCULUSES, and ANEMONES that have done blooming and begun to turn yellow, should be taken up carefully, dried in the shade, and, when cleared of their leaves, they should be placed away in boxes.

RANUNCULUSES and ANEMONES planted in February are advancing to bloom, and should be copiously watered, and shaded from the hot sun: hoops and mats are usually resorted to. The transparent waterproof cloth would be found much lighter and better; even common holland, at a trifling expense, if on a sharpish ridge, would throw off water, and be lighter. In shading, the cloth ought not to be closer down than will just keep off the sun; for air is indispensable, and water will not injure the blooms, until they are pretty forward, but sun will injure them from the time they show colour. There are some who shade them by means of a flat screen, supported at a distance, that they may not be deprived of air, but it is troublesome; and it does not do to plant them in the shade, because they want sun to bring them forward, and again when their bloom is off. Some persons water the Ranunculus by means of a couple of pipes, full of holes, that go the length of the bed, a foot or fifteen inches below the surface; then communicate with one that comes above the surface, with a sort of funnel to it, and, by pouring water into it to fill the pipes, the bottom is always kept cool and moist without watering the surface; but it is one of those plans which we notice rather to object to it than approve. All flowers and plants want water on their foliage as well as their roots; and although this plan, which we have read of as having been practised at Norwich, will supply the roots, and work well, by capillary attraction, drawn up towards the surface, a sprinkle, frequently, on the foliage will do more good than theorists imagine; besides, we have seen wonderful growth and bloom without such contrivances, and prefer natural to unnatural means at all times.

AUTUMNAL CROCUSSES may be removed, but they must not be kept out of the ground very long, and it is quite as well if they are replanted at once, or, unless they are too thick, they are better not moved at all; yet, when they have been in the ground some three years, they require to be parted.

AMARYLLIS LUTEA, and other autumn flowering bulbs, may be removed and planted, all this month and next.

DRESSING THE BORDERS, by stirring the earth, raking off all the weeds and stones, tying up all straggling plants, supporting weakly flowers, cutting off decayed blooms, and cutting down all the tall plants as they cease flowering, should be attended to all the month. Exceptions as to cutting off decayed flowers must be made in cases where you require seed.

CUTTINGS may be taken from Fuchsias, Verbenas, Petunias, Pansies, greenhouse plants of various kinds, Geraniums which have done blooming, and almost any subject, towards the end of the month; and almost everything will strike under a common hand-glass, even in the common borders, if shaded.

DESTRUCTION OF VERMIN.—Aphides, small caterpillars, the black fly, and many other pests, may be kept under by syringing, out of doors, and by fumigating and syringing indoors. Slugs will congregate in the shady borders during the hot weather, and especially under all heavy crops. Polyanthuses and Primroses, Pansies and choice Violets, are especially harbours for them, and must be constantly looked after. Many things may be guarded by a border of lime, but they do not look the better for such an addition. Earwigs must be trapped, as for Dahlias.

ROSES.—Towards the latter part of the month you may prepare for budding. Cut away all the branches of stocks but the ones you intend to bud upon, that these may strengthen; and if one branch is much stronger than the others, you may rely on that alone, as it will keep the lead if you bud the weaker ones. Next month will be better for extensive operations; but you may look out for buds, and prepare yourself. If you really get buds this month, you must endeavour to use them. The budding of Roses with success depends much upon the condition of the stock: if the bark will rise well, the bud will take well, for we are no advocates for stripping out the inner wood of the bud when cut off. With a sharp budding-knife cut a slit just to the bottom of the bark, an inch and a half long, in the present year's wood of the stock, the nearer to the trunk the better; half-way, or in the middle of this slit, cut one across it; with the thin handle of the budding-knife raise the bark of the stock; then cut a piece an inch long, and thin, only just rather thicker than the bark itself, having a leaf in the centre of it, from the piece you mean to bud; tuck this dexterously under the bark which you have raised, so that the bark will hold it in. This is to be tied down upon it, so that the leaf of the new piece of wood comes in the centre of the cross cut; bind it thus, with the bark down upon it, with a bit of worsted or matting, and it is done.

The operations in the Flower Garden are so very similar to those in May, that very few subjects require separate notice. Generally speaking, all the annuals sown in heat or in beds for planting out, are planted out in May and June. Those in heat, (unless continued to grow in pots for the purpose of advancing them more before they are placed out) would be chiefly planted out last month, but this present month will require the bulk of the annuals to be completed. The bedding out of all the tender and half-hardy plants grown on purpose, or saved under cover, for beds and borders, can hardly be completed too soon; Fuchsias, Verbenas, Geraniums, Heliotropes, Petunias, Salvias, Calceolarias, especially the refuse of seedlings, from which the best are taken, and all other subjects which require protection in the winter, are alike in this respect. Herbaceous plants in pots may be also placed in the borders; and biennials in pots, if they have not already bloomed, will be useful in ornamenting the garden. Petunias, Verbenas, and some other of the subjects, planted last month in clumps, may require regulating by pegging the shoots to the ground in the way they are to grow. A writer, in one of the public newspapers, suggested some time since, that pegs may be superseded by means of lengths of bast matting; a few inches of which, forming a loop over the shoot, could be made a complete holdfast. By taking a dibber, making a hole, into which the two ends might be placed as far down as to make the loop close to the ground, and then by squeezing the soil, as in the case of planting out, the ground would hold the bast tight. It is a much more troublesome way; but as we have done it with dwarf-growing Verbenas, we cannot say it may not be useful when pegs are not to be obtained. Stocks may be planted out as last month; and scarcely a single operation recommended for May, will be out of place in June, unless it has been done already.

Tulips, as they go out of bloom, may have all the weather given to them, by removing all sorts of covering; and they should not be disturbed until the leaves are turning brown, and the stem has decayed half way down. This will have happened to some exposed beds last month; but many more, and those of the most choice kind, grown in covered beds, will not have arrived at any such state until the end of the month, or thereabouts. In the mean time, the Tulip beds must be weeded as clean as any crop in the world; for if weeds are once allowed to grow to any size, they can hardly be removed without disturbing the bulbs. The taking up was fully discussed last month, and the same will apply to the best beds left in the ground to the present period. The removal of the pods of seed the instant the blooms fade, hastens the ripening of the bulb, and the decay of the foliage; and therefore should be attended to as jealously this month as in May.

ORCHIDEOUS HOUSE.

As the sun becomes more powerful this house must be well shaded, and the moisture be the more carefully kept up, by syringing the plants and cuttings, wetting the floors and pipes, and the moss that may be about the walls and the blocks, or other places on which the plants are growing. If you have no other means of growing these plants than the ordinary stove affords, you must attend particularly to the plan recommended last month; for the dry atmosphere which would prevail, without the syringing, would inevitably stunt the blooms, and completely alter their character. Heat and moisture are the great means by which the finest specimens are produced, and these must be given. These, however, can only be imperfectly supplied in an ordinary stove, where there are many other plants. We have very recently seen a shallow tank, occupying a considerable space, in a common stove, at the warmer end of it, and a trellise or barred top to it, on which, and over which, the orchideous plants were standing, or suspended. The water was heated from the pipes, by a branch going through it; and the plants, which were almost enveloped in wet moss, were doing pretty well. A partition, to shut this off altogether, would have completed a very useful contrivance. When the orchideous plants have perfected their flowers, they may be kept cooler, and, indeed, will remain in perfection in an ordinary conservatory, or a drawing-room, for a considerable time.

PITS AND FRAMES.

These structures, being emptied of their winter stock, may be variously employed: in one way, by filling them with tan, a very genial bottom-heat will be produced for the propagation of cuttings, in pots or pans, with glasses over them, and may be made exceedingly useful. Others may be used as cold pits, to fill with small Camellias, Rhododendrons, and plants which have their growth to make, and for which there is no convenience in the houses or other places. The frames may be appropriated to the growth of Cucumbers or Melons, or placed over Cauliflowers, Celery, Lettuces, &c. picked out to strengthen, because they afford facilities for covering against too much rain, and for shading against too much sun. Wherever there is a genial bottom-heat, such as a pit filled with tan will give, cuttings of almost any kind can be struck with greater facilities. Even Piccotee and Carnation pipings, Pansy cuttings, and various other things that will do in the border, will do much better with slight bottom-heat; and propagation of all kinds, which must be going on where there is a general collection of plants and flowers, is much simplified by these means. Many seeds, too, will come up with greater certainty where there is slight heat and effective covering. Annuals and biennials, as well as perennials, sowed in a pit thus provided, and covered with glass, will come up with greater facility; and where they are pricked out, they will establish themselves soon, when they are thus assisted.

THE GREEN-HOUSE.

Hybrid Rhododendrons, Azalea indica, and many of the Hovea, Chorosima, Epacris, and other hard-wooded plants, may be removed from the green-house to a shady, well sheltered place in the garden; but nothing equals for this purpose a canvass house, like a Tulip stage, in which they can have air without wind, rain, or sun, whenever such deprivations are desirable. For want of this, a shady place in the open air must do, or a pit which can be made available. These plants want to make a strong growth, and if they were checked by the sun scorching their pots, and the fibres next the sides, or by cold winds, or want of water, or too much wet, the plants are spoiled for a season, if not for ever. They require air, but not wind; a cool temperature, but not a cold one; moisture, but not wet; and if these wants be not observed and supplied, the plants will be rusty in the foliage, short in their growth, unhealthy in their appearance, and naked on the branches and all the under parts. The drainage, therefore, must be examined and secured; the ground made impervious to wet, but sloping a little, to run all water away; shielded from the north and east winds, protected from excessive rain, and handy to rain-water, or soft river-water, that there may be no stint of moisture when required. Many spring or pump-waters are highly detrimental to plants; and if there be no other, it should be kept in shallow vessels or tanks, exposed to the air and sun, to raise its temperature and soften it a little. Geraniums still remaining in the house, Calceolarias, and all the flowering plants, will require shading; but the shading should not materially darken them, or they will draw towards the light. Among the plants not turned out, if there were any not already shifted (as directed last month, for those whose roots filled the pots), they should be so shifted before they make their growth—indeed before they are set out of doors, or in their summer quarters, as, to be cramped in these pots would materially affect their progress; and if they, from any cause, cannot be shifted into larger pots, tubs, or other vessels, they must be constantly watered, for once dry, they would be dead; yet the drainage must be perfect, for, once wet for any time, through water stagnating in the pot, and it would be as fatal. While plants are making their summer growth, cut any useless shoots, and all that may come too vigorously for the rest of the plant; for very strong shoots will sometimes take the best part of the nourishment wanted for the whole plant, and it would become ugly and unsightly. Small plants, or cuttings beginning to grow after potting, should for the most part have their tops pinched out, to induce side branches; for tall, narrow plants, never look well, and some are very much addicted to that growth, such as Epacris and Hoveas. Other plants inclined to be bushy, may not require this; but all that have a tendency to shoot up much, should be checked before they are three inches high. Keep the green-house clean, remove all dead leaves, occasionally wash down the shelves, to get rid of the dirt that comes through the pots when they are watered, and give all the air you can.

THE CONSERVATORY.

This month the Rhododendrons will have gone out of bloom, and unless the seeds are especially wanted, the seed vessels should be removed directly the flowers fade. This encourages the growth of the wood, on which the blooms of next season are formed. These and the Camellias together, being destitute of flower, it requires some judgment to so display blooming plants as to counteract this defect. Among the most valuable assistants on this occasion are Roses, both dwarf and standard, Calceolarias, Balsams, which in small pots and rather stunted would be in flower, Cacti, which are very showy, and of all heights, and other out-of-door as well as indoor plants; these must be placed among, and some of the most striking in front, of the plants, which are not in flower, and which will form excellent green back-grounds. Tropæolums also are gay in their way. Heaths, and other hard-wooded plants, still in bloom, &c. It must be the study of the amateur to keep up a supply of all these things for his principal show-house, or conservatory; and common things must supply the place of better where there is a deficiency of flowers, on which flowers, in fact, the entire beauty of the conservatory depends. The only object this month, as to temperature, is to keep the house cool, which can only be done by giving plenty of air, and shading it from the heat of the sun. All the plants in pots that can be removed without damage should be taken out as soon as they get past their prime; but Camellias and hybrid Rhododendrons, which will do better there than any where else while making their growth, should, if possible, remain; and, with a little taste, they may be made available for assisting the general effect, unless they predominate in quantity too much. Of the Roses to be flowered in the conservatory, all the summer varieties can be used. Many perpetuals, and the tea-scented, will keep in flower a long time, but by keeping a supply of both standards and dwarfs in pots, they may always be changed as soon as they get shabby. The climbing plants, as well as all others that are fixtures, must be frequently gone over, to cut away the declining flowers, dead leaves, and useless shoots, and also to tie up or fasten the shoots which are growing fast, and are dangling about. The shelves, borders, beds, stands, and ornamental vases must be kept clean, and free from dead flowers, and falling leaves and petals. Much depends on the most scrupulous attention to cleanliness. The plants must be kept as clean as the shelves, and this requires daily attention where there are many flowers, because they are continually falling. With regard to Mignionette, Heliotropes, and other subjects kept almost entirely for scent, they may be in every open place on the borders and beds; and Pinks and Stocks, which are sightly when well grown and flowered in pots, may be put in sight. The roof glasses of the conservatory should never be left open in wet weather, as rain destroys all flowers; but on fine bright days, when there is no danger of wet, the whole place may be open, except so far as may be necessary to enable you to fix the shades: an hour's hot sun through the naked glass of a conservatory would destroy the bloom more than a week would with shade and care.

THE KITCHEN GARDEN.

The general routine of the kitchen garden for this month, while everything is growing rapidly, consists chiefly of watering and weeding, keeping the paths and the crops well hoed and thinned out, the paths all clean and neat, the weeds and waste of the garden in some place out of sight, or at least by itself, ready to be dug in like so much dung, as soon as it gets a little decomposed. Dig all the vacant places as soon as Cabbages and other crops come off, dunging or dressing such portions as require it. With regard to particular crops, we must take each under the proper head. In a good deal of it there is little other than a repetition of last month.

Cabbages may be planted out wherever there is a disengaged piece of ground; they are a never-failing crop, always useful. Any that have been planted out a few weeks may be earthed up, for this always refreshes them, both by giving the stems an opportunity of rooting further up, and by keeping the under part of the root cooler. It is better in this month to wait for a shower, than to plant without; but if you are driven, that is, if you have neglected planting Cabbage for use, you should soak the ground well all over. Sow some seed this month, and where this is recommended to be done several times in a season, you must apportion the quantity to your wants. Red Cabbage for pickling, may still be planted out.

Broccoli may be pricked out in nursery-beds six inches apart, to grow into strength without becoming lanky or drawn, which they will if left in the seed-bed. Some of the strongest may be planted out.

Brussels Sprouts may be pricked out in the same way, and about the same distance apart; and some of the strongest may be planted out.

Celery.—Draw some deep drills, and plant out a few of the strongest plants to use small, and before they grow much, as this season of planting would be apt to run, if attempted to be kept. Prick out any that may be in the seed-bed, to acquire strength against a later planting. The ground should be rich, or well dunged for the occasion.

Herbs.—Most people, instead of gathering herbs while they are young and in full vigour, wait until they are either flowering or actually seeding. Some should be gathered this month and dried in the shade, where they are protected from the weather, but may have air.

Peas.—Continue to sow as before directed, in moderate quantities, and of some of the kinds the most rapid in going to bloom. There are, however, some choice sorts which require longer growth, and a few may be sown for variety. You can hardly have too many seasons for Peas, if you value them as a vegetable. Stick all those that require it, or they will grow but half a crop; and more than half of even those will be spoiled by laying on the ground. Earth up all that are up and ready for it.

Beans.—The broad kinds may also be sown now, and those which are forward enough must be earthed up.

Beans.—The scarlet kinds may be planted out from the seed-bed, or sown where they are to grow for a late crop; but this crop is better sown in May, because they are sure to last till the frost.

Spinach is another crop that may be sown for succession, and especially if the consumption is great. Thin crops already forward by drawing for use; for where there are four rough leaves they will do to eat, and many prefer doing so to hoeing them out while younger.

Turnips.—Sow early in the month, in good rich ground after a good soaking rain, or soak the piece of ground sufficiently to answer the purpose. Turnips ought to be up quickly, and grow quickly afterwards, as they are good for-nothing when grown. Sow, also, late in the month, or when the ground is in good order, even if the middle of the month. We consider Turnips a most useful crop, and would sooner waste seed than miss a chance.

Potatoes of a late kind may be yet planted, and the sooner the better. There should not be a piece of idle ground this month. Earth up any that are doing well and require it. If potatoes are not well earthed up, they show their produce on the surface; and all potatoes exposed to the air, or even if too near the top of the ground, are spoiled for any thing but seed.

Carrots.—Some may be sown after a shower of rain.

Onions.—Another sowing of these may be useful to draw small. Look well to onions already up and growing, and see that they are properly weeded and thinned out, that they may grow to their proper size. Tie up carefully any that are going to seed, lest the wind break them.

Cucumbers and Melons.—Regulate their branches, so that they lay evenly over the beds. Give plenty of air in the day-time; attend to their linings if the heat is declining. Let not too many remain on any of the vines, if you are desirous of handsome fruit; but if for ordinary consumption, let all grow that will grow. Generally, however, when a vine is very prolific, it is better to remove a few. Cucumbers sown last month, for planting out of doors, should be potted singly in small pots, or in pairs or threes, in larger ones. Those sown four, five, or six in a pot, should be reduced to three as soon as their growth indicates which are the stronger ones. The ridges may be prepared either with or without dung, as required, but a foot thick of hot dung buried in the ridges will help a good deal. In all other respects, look well that you attend to last month's directions. So, also, with Cucumbers for pickling.

Salads.—Sow as before; and this applies to every kind you are consuming—Lettuce, Radish, Corn Salad, Mustard, Cress, Rape, and Endive. Plant out some of the Lettuce to succeed others.

Tomatas, Capsicums, Chilies, &c.—Those planted out last month must be supported. If against a wall, the best plan is to nail the principal branches with shreds as you would a tree. Tomatas, in particular, require this; for the fruit will otherwise bear the branches to the ground, where they get discoloured from the damp.

Cauliflowers.—Plant out the latest or last you have, giving them good rich soil, and choosing a period when the ground has been soaked well.

FRUIT GARDEN.

Wall Trees.—Thin out all the Wall-fruit that have set too thickly, that the trees may not have too much to do. If any of the branches or shoots which are not required, or which grow straight out from the wall, have been overlooked, take them away. Syringe the trees occasionally; examine the walls for grubs, snails, and other insects; avoid heavy crops in the borders, that will take the sun from the roots. If you do crop the border, let the crop be light, and be adapted for shallow culture. Lettuces, for instance, French Beans, and other subjects which are in rows wide apart, and horizontal with the wall, will interfere least with the sun, and do least mischief as to the impoverishment of the lower soil. Carrots, Beet, Horseradish, and such like, would be the worst, and crops that completely cover the soil. Very early Dwarf Peas, in cross or horizontal rows, four or five feet apart, will not do much harm.

Vines should be well looked after, and all the branches shortened to the first joint past the bunch or bunches of fruit; but, unless the crop is a partial failure in some parts of the vine, no branch ought to be allowed to perfect more than one bunch of fruit, and that should be the best, which is generally the one nearest the old wood. Take away all the branches or shoots that are not required for next year's fruiting. Fasten the branches as they advance, that they may not be broken by the wind, nor borne down by their own weight.

Grafted and Budded Stocks require to be continually examined, to see that the Stock does not grow any where to the disparagement of the graft or bud. The clay must be examined, and in time removed. The ties also should be looked at, and if the union does not seem complete, replace the clay; but by the end of the month the clay can mostly be dispensed with altogether. Trees budded last year want examining also, and whatever of the Stock is growing should be removed.

Gooseberries, Currants, and Raspberries may be assisted by hoeing the weeds off, and stirring the surface of the ground between them. See that the raspberry canes are supported properly, as a good deal depends on that being done. In gathering currants and gooseberries early, they should be so removed as to give what are left more room to grow. The gooseberries or bunches of currants, which may be called a full crop, will bear two or three off for one left on, and those left should be at equal distances, as they would grow larger and much finer for having room.

Strawberries require the same treatment as mentioned last month. If you want runners to make good plants for the next year's fruiting, peg them down to the earth, or into pots; but if you value the fruit only, remove the runners as fast as they appear until the fruit is all off.

Espalier Trees always want looking to, as their growth frequently displaces some of the fastenings, which should be made good. The fruit also may be thinned, as they are all within reach, and the remaining fruit will be all the better for it. See that no useless branches have been overlooked and left to grow; if there be any, they ought to be removed forthwith.

Standards, in many cases, do not allow of such management, but they would be much the better for it, if it be at all practicable. The wind generally thins them a little—sometimes a good deal, but it bruises the remainder of the fruit; whereas, if they are thinned to a reasonable distance, they are not bruised or damaged by one another, and are so greatly strengthened that they are larger and clearer for it.

Grubs and Caterpillars are to be reduced, if not extirpated, by the syringe, which, if applied well and in time, dislodges thousands and injures nothing. It is a wet, uncomfortable job; but some fruit trees are worth all the trouble, and well repay you for the work. The syringe, or garden-engine, should have a fine rose, that will project with some force, but not heavy enough to disturb fruit or bruise the leaves; and the force should be used direct against the branches, and under-sides of the leaves. Some, where trees are much infected, burn bunches of reeds, such as are used against boat or ship-sides, when the men are pitching them. These make a considerable smoke, and are sometimes held to windward, so that the smoke is blown all among the leaves and fruit; but even then the syringe is necessary, to disturb the half-stupified insects, which merely fall from one part of the tree to another, and would, perhaps, recover. Many, on using this remedy, sprinkle occasionally some flour of brimstone on the flame. It is no use trying this unless there is wind enough to blow the smoke through the head of the tree; the operation is only worth while when the fruit is choice, and the caterpillar threatens to destroy it. Anything that will burn easily, and make a great smother, may then be used the first time there is a gentle breeze; and, after smoking for some time, the tree may be shaken, which will bring down many; and then the garden-engine or syringe, applied as directed, once or twice on following days, will generally clear a tree, however much it is infested by these plagues.

Ants.—These should be destroyed at every cost in the fruit, flower, and kitchen garden, as well as in frames and hot-houses, pits, &c. None but those who suffer can tell the mischief they are capable of doing, and how completely they overcome everything before people see the extent of the evil. These insects, if they once get into a pot, turn the whole contents into a sponge, eating and destroying the tender fibres of roots, and all but killing a plant before the mischief is suspected. In the fruit garden, if they once locate under a wall, they destroy the fruit by wholesale, long before it is ripe enough to gather; and, in the flower garden, it is discovered that a large portion of the mischief attributed to earwigs, and other insects, is performed by these little pests. The various situations which they occupy render as many remedies necessary; for although any one may answer in some places, the means will be found inapplicable to other circumstances. A mixture of grease and arsenic has been found efficacious in circumstances where the ants have an unassailable retreat. By dipping sticks into it while warm, and letting them cool, they are covered thinly, and the insects will eat it off to the wood. They do not attack it with such avidity if in greater thickness or in lumps. By inverting flower-pots, where they infest plants, stopping the hole up to make it dark, you may take millions in the bright weather. By making deep holes with a crowbar, say a yard deep, wherever you can, in their haunts, they fall down, and are destroyed by thousands. By laying a beef bone, fresh from the table, where they assemble, they will cover it as long as there are any, and you may scald them by filling a watering-pot with boiling water, and pouring it over them with the rose.

Jaune Desprez.

Rosa Gallica.

THE CULTIVATION AND MANAGEMENT OF ROSES.

We are indebted for the following treatise to one of the most experienced and successful cultivators in Europe,—a gentleman, whose knowledge of the flower and its capabilities is founded on extensive practice and unbounded zeal in the pursuit of his favourite object, who has not only conducted a long series of experiments, under all the varied circumstances to which the Gardener is subject, but who has read, and studied, and followed, to a certain extent, until convinced of their propriety, or error, every author who has written upon this queen of flowers, the Rose. Besides this, with the advantages of visiting, for many years, all the leading Rose gardens in the kingdom, and on the continent, and profiting by the practice of the owners, he has been enabled to cultivate, with almost unlimited success, nearly all the known varieties of the flower, and to raise seedlings which bid fair to rival many of the finest of the species yet in this kingdom.

When it is considered, that almost every body of note, engaged in the propagation and sale of the Rose, has, more or less, written upon the subject of its culture, and that amateurs of some experience have added their share to the Rose literature of the age, it cannot be anticipated that much can be offered that has not, in some form or other, been given to the public. Paul, Rivers, Lane, Glenny, and others known to excel in their vocation, have given much information, founded on practice. Each of these have had their own way of doing things, and have favoured us in their turns with elaborate directions. As, however, they do not all recommend alike an unerring system, it is not too much to say that one who has severally practised after each, and submitted a certain number of subjects to all the various modes of treatment, is able to select the best points from all of them; and that, by adding something from the systems he has seen prevailing in different nurseries upon the continent, he can give much useful information that can be found in no other existing work.

The treatise, therefore, now submitted, is, in fact, a straightforward account of the best mode of doing every thing connected with Rose culture. That some points may be recognised as being similar to one, and other directions may be known as the ideas of another, is not questioned. It comes, as a matter of course, from one who has tried every thing, be it recommended by whom it may; adopted those plans which have succeeded best, and rejected all that proved less efficacious, or mere speculation, that without offering anything new, he might, nevertheless, give all that is valuable. But, in this treatise, the public will not only have the advantage of the certainty without the uncertainty, the good without the evil, the practicable without the impracticable, but they will also have much that is purely the result of practice and experiment, and perfectly new.

We offer it, therefore, as the best treatise extant; the most perfect system of Rose cultivation yet made known. From the saving of the seeds, to the perfecting of the tree, there is nothing left in doubt, nothing based on theory, nothing given from hearsay; and whatever may be done hereafter, we are quite prepared to substantiate, that for those who know little or nothing of the subject, it is the only sure guide to the safe and superior culture of the Rose.

From another pen we have, to follow the treatise, some excellent remarks on the present incomplete and unsatisfactory classification of the various Roses, under the heads of what may be called families. It is appropriate, because it is desirable we should concentrate all that we can get upon so interesting a subject. With regard to this paper we will not say much; it is not without some interest, and may do good service, because, however crude a proposal may be made, it might form the ground-work of improvement. That there is a great deal of truth in some of the remarks is certain; and though we cannot exactly follow the writer through all his opinions with equal pleasure, he states known and prevailing evils, and speculates on the probable means of averting them for the future, by a new classification, which, if it have no other merit, can, at least, be well understood by common people, of whom there are many as fond of the Rose as the most elaborate writer upon the subject.

Ed.

SELECTION OF PLANTS.

The varieties which are being added every season to this beautiful flower, and its universal adoption, as a leading ornament in gardens of all kinds, warrant us in preparing the amateur, who is beginning to grow them, for the evils he may have to encounter, and the pleasure that he will derive from conquering them. We agree with a former writer on this subject, that the division of Roses into families, with the most unimportant differences or distinctions, is discouraging to the amateur, who may wander through the most popular catalogues, without becoming acquainted with the fine lines which divide one family from another: and therefore we propose to make a few distinctions, which are important, and which even a novice can understand. And here we would observe, that out of one thousand which are mentioned in the larger catalogues, eight, or, perhaps, nine hundred, can be done without as well as with; unless people really mean, for curiosity's sake, to grow an entire collection. The properties of the rose have been laid down upon principles which no one can mistake; and as one of our present lessons is to assist the amateur in his first purchase, we will give the original rules for estimating the good from the bad.

THE PROPERTIES OF A FINE ROSE.

There is no flower more difficult to define than the Rose, and the difficulty arises out of several curious facts. First, the Rose is the only flower that is beautiful in all its stages—from the instant the calyx bursts and shows a streak of the corolla, till it is in full bloom. Secondly, it is the only flower that is really rich in its confusion, or that is not the less elegant for the total absence of all uniformity and order. The very fact of its being beautiful from the moment the calyx bursts, makes the single and semi-double Roses, up to a certain stage, as good as the perfectly double ones are; and there is yet another point in the construction of some varieties, which makes them lose their beauty when they are full blown. For instance, the Moss-rose is a magnificent object so long as the calyx is all seen, but so soon as the flower fully expands, all the distinction between a Moss-rose and a common one has departed, or is concealed. From this one fact we insist that Roses, even for show, must be divided into distinct families, and those qualities for which families are most distinguished, must be exhibited to the best advantage. This brings us at once to an acknowledgment that the grand characteristic of a Moss-rose is its calyx. These properties must never be estimated by full blown flowers, and therefore, all varieties of moss, from the *cristata* to the *moussue presque partout*, must be exhibited before they expand enough to hide the calyx. In the present state of Horticulture, we can hardly allow that any other description of Rose should be grown, if semi-double. Those who are more indulgent, consider that a Climbing-rose, or a Rose of peculiar habit, or indeed any other distinction, should be sufficient to justify semi-double and imperfect flowers. Certainly, if we concede anything, this would be the extent; that a new colour should justify the saving of any Rose, even if it were single. But we are much mistaken if any who have been used to grow the best double Roses, would give much for a semi-double or single variety.

If there be any distinct and valuable feature *in a plant*, which justifies the growing of a variety, for its beauty *as a plant*, the bloom is at once out of the question, and we hardly take such a variety to be worth the florist's keeping. There are, however, some properties which apply to all Roses, whatever be their characteristics in other respects, and, therefore, must be taken as an estimable point in the construction of a flower.

"1. The petals should be thick, broad, and smooth at the edges."

Whether this be for a Moss, which is never to be shown fully opened, or the florist's favourite, which is to be shown as a dahlia, this property is equally valuable, because the thicker the petal the longer it is opening, and the longer does it continue in perfection, when it is opened. There is another essential point gained in thick-petalled flowers:—The thicker the petal the more dense and decided the shade or colour, or the more pure a white, while the most brilliant scarlet would look tame and watery if the petal were thin, transparent, and flimsy. Hence many semi-double varieties, with these petals, look bright enough while the petals are crowded in the bud, but are watery and tame when opened, and dependant on their single thickness.

"2. The flower should be highly perfumed, or, as the dealers call it, fragrant."

Whether this is to climb the front of a house, bloom on the ground, or mount poles or other devices, fragrance is one of the great charms which place the Rose on the throne of the garden as the queen of flowers.

"3. The flower should be double to the centre, high on the crown, round in the outline, and regular in the disposition of the petals."

This would seem to be a little contradictory, after saying that in a Moss-rose, the full-blown flower cannot be allowed, because it conceals the grand characteristic of the plant. But it is not contradictory, because we defend it on grounds which render doubleness equally valuable to the moss family, which should not be shown in full bloom, as to those which are so exhibited. The more double the flower, even when amounting to confusion, the more full and beautiful the bud in all its stages. Those who have noticed the single and semi-double Moss-roses will remember that the buds are thin and pointed, and starved-looking affairs, while the old common Moss-rose, which is large and double as the Cabbage-rose, is bold, full, rich, and effective, from the instant the calyx bursts. At this point, we shall have to branch off and take families; perhaps the Moss family is the best to commence with. Those who now follow through the different species or varieties, will find the first three rules are essential to all, and are therefore repeated with each division.

PROPERTIES OF MOSS ROSES.

"1. The petals should be thick, broad, and smooth at the edges."

"2. The flower should be highly perfumed, or, as the dealers call it, fragrant."

"3. The flower should be double to the centre, high on the crown, round in the outline, and regular in the disposition of the petals."

"4. The quantity of moss, the length of the spines, or prickles, which form it, and its thickness, or closeness, on the stems, leaves, and calyx, cannot be too great."

This being the distinguishing characteristic of Moss-roses, the more strongly it is developed the better.

"5. The length of the divisions of the calyx, and the ramifications at the end, cannot be too great."

As the entire beauty is in the undeveloped bud, the more the calyx projects beyond the opening flower, or rather the more space it covers, the better.

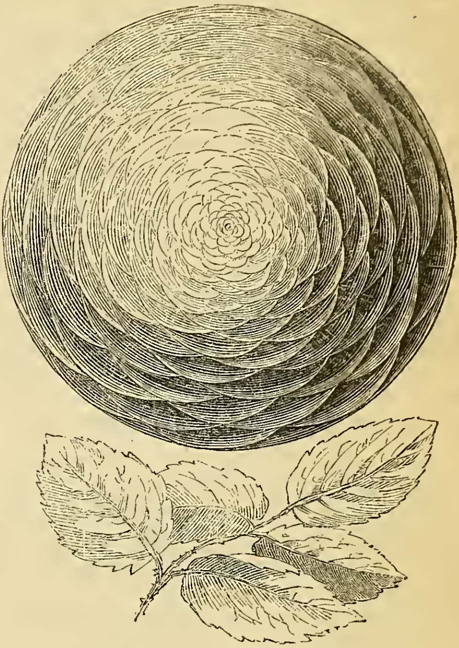

Diagram of a fine double Rose.

"6. The plant should be bushy, the foliage strong, the flowers abundant and not crowded, and the bloom well out of the foliage."

"7. The colour should be bright or dense, as the case may be, and if the colour or shade be new, it will be more valuable; and the colour must be the same at the back as the front of the petals."

These seven properties would constitute a Moss-rose a valuable acquisition, and probably, at present, the greatest acquisition would be a yellow one.

"8. The stem should be strong and elastic, the footstalks stiff, so as to hold the flower well up to view."

PROPERTIES OF ROSES FOR STANDS, SHOWING THE SINGLE BLOOM LIKE DAHLIAS.

"1 The petals should be thick, broad, and smooth at the edges."

"2. The flower should be highly perfumed, or, as the dealers call it, fragrant."

"3. The flower should be double to the centre, high on the crown, round in the outline, and regular in the disposition of the petals."

"4. The petals should be imbricated, and in distinct rows, whether they be reflexed, like some of the velvety tuscan kind, or cupped like a ranunculus; and the petals to the centre should continue the same form, and only be reduced in size."

"5. The colour should be distinct and new, and stand fast against the sun and air, till the bloom fail."

"6. The stem should be strong, the footstalk stiff and elastic; the blooms well out beyond the foliage, and not in each other's way."

The very worst habit a Rose can have, is that of throwing up several blooms close together, on short stiff footstalks, some of which must be cut away before the others can be fully developed; as show-flowers they are bad, and as plants they are very untidy. The side buds prevent the centre flowers from opening circularly, and when the first beauty is off them, they exhibit dead Roses held fast between two living ones. As these show Roses may be found in almost every family, we must say nothing about the general character of a plant. We now proceed to other distinct families.

THE PROPERTIES OF NOISETTE ROSES.

However singularly some catalogues class these roses, we intend, by this name, to distinguish those Roses which bloom in clusters.

"1. The petals should be thick, broad, and smooth at the edges."

"2. The flower should be highly perfumed, or, as the dealers call it, fragrant."

"3. The flower should be double to the centre, high on the crown, round in the outline, and regular in the disposition of the petals."

"4. The cluster should be sufficiently open to enable all the flowers to bloom freely, and the stems and footstalk should be firm and elastic, to hold the flower face upward, or face outward, and not to hang down, and show the outside, instead of the inside of the blooms.

"5. The bloom should be abundant at the end of every shoot."

"6. The blooming shoots should not exceed twelve inches before they flower."

"7. The bloom should stand out beyond the foliage, and the plant should be compact and bushy."

We now proceed to a family which we shall designate Climbing-roses, and which comprise blooms of the Noisette kind, that is, in bunches; blooms which come singly, large and small; flowers early and late; and, in fact, which comprise all sorts of Roses that grow tall enough for training.

PROPERTIES OF CLIMBING ROSES.

"1. The petals should be thick, broad, and smooth at the edges."

"2. The flower should be highly perfumed, or, as the dealers call it, fragrant."

"3. The flower should be double to the centre, high on the crown, round in the outline, and regular in the disposition of the petals."

"4. The joints should be short from leaf to leaf. The blooms should come on very short branches, and all up the main shoots. The plant should be always growing and developing its flowers, from spring to autumn, and the foliage should completely hide all the stems, whether the plant be on front of a house or on any given device."

Having now travelled through the chief of the families, which require separate notices of their properties, the first three properties numbered being required in all of them, we add, by way of a finish for all, except Mosses, that

"The foliage should be bright green and shining, and, though not likely to be found in many varieties, it should be permanent, and constitute an evergreen."

By this we mainly establish a point in favour of an evergreen. We mention nothing about size, because size forms the distinction between many roses which have no other difference, and has little or nothing to do with the properties of the Rose.

And now, having, upon what is considered the best authority,* given the properties of a perfect Rose, in several distinct families, we come to the first step in their culture:—the choice of the varieties intended to be grown. And this is no small matter, when it is considered, that in catalogues of what are said to be *select* Roses, there are no less than thirty-three families, real and pretended, and more than a thousand—indeed, nearly eleven hundred varieties; and we are told, in this very catalogue, that, "owing to the great increase in the number of varieties of Roses, it has now become impossible to include the whole collection cultivated here in a catalogue, so as to come within the limits of a twopenny-post." Sickening as it is to all growers of flowers, to be tempted by descriptions to grow a vast number, and find many so much alike, as almost to defy identity; disheartening as it may be for a beginner to make a choice of a few dozen varieties, from nearly eleven hundred, we shall not be stepping out of our way, if we give the Rose-growers our account of the different families, and offer a few hints as to the best in each family; but they will not be what they ought to be, nor will our readers be quite satisfied, perhaps, that some which are so nearly alike should be placed in two different families. Roses are rapidly improving, and hybrid varieties will no doubt, in the course of time, destroy all distinctions of family as now recognised. To follow the arrangement of a catalogue now before us,* we begin with the

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* Glenny's Properties of Flowers and Plants.

PROVENCE ROSE, *Rosa centifolia.*

We recommend the amateur to select from the following dozen, and indeed he may safely take them all from the Provence family, as one of the best for showing:—

Alphonse Maille, large, purplish red, cupped.
Cristata, or *Crested Moss*, like the Cabbage-rose, but with singular calyx.
Curled, a singularly formed veined rose.
De Rennes, a silvery blush colour, large.
Duchesne, very large rose, considered fine.
Rachel, very finely formed large perfect rose.
Reine de Provence, pale lilac rose, large.
Rochebardon, a very deep rose.
Spotted, carmine rose, spotted white, good.
Superb Striped Unique, white, striped pink.
Sylvain, a brilliant rose, very fine.
Triomphe d'Abbeville, light vivid crimson.

This family has been greatly reduced in a late catalogue, by removing a number that were formerly included in it to the family called the Hybrid Provence; and this affords an illustration of the extreme want of knowledge, and absence of common prudence, in the original divisions. However, we must, at present, take things as they come, and describe the Roses as they are offered to the public.

DWARF PROVENCE ROSES

are a small family, and the only one worth growing, even among so large a selection as we are making, is *Pompone de Bourgogne.*

MOSS-ROSES, *Rosa centifolia muscosa.*

Of these the following are the most distinct varieties:—

Blush, a very fine double and distinct blush.
Celena, large, crimson, with shining leaves.
Eclatante, brilliant rose colour, and fine.
French Crimson, very bright rose, double.
Lancel, deep red rose, and very mossy.
Lansezeur, fine deep crimson, veined.
Malvina, fine lilac rose, very distinct.
Moussue partout, leaves and calyx mossy.
Moussue presque partout, leaves mossed.
Prolifère, fine mottled rose, of large size.
Prolific, dwarf moss-rose, distinct in habit.
Unique de Provence, white, in clusters.
White Bath, white, occasionally striped.
Perpetual Red Moss, deep rose.

There are many new Moss-roses, and the last-mentioned is rather new; but all the others are of moderate price.

FRENCH ROSES, *Rosa Gallica.*

This family is by some growers divided into two sections; the one containing self-coloured and shaded roses, the other variegated. As this family contains nearly two hundred, some of the growers venture to lessen the difficulty of solution, by publishing a few worthy of patronage. Even the Rose Amateur's Guide, which contains select lists for amateurs to begin with, give them no less than sixty kinds. We must try to reduce this number, by recommending of the selfs and shaded kind—

Agnodice, very large, compact, crimson.
Beauté parfait, compact, brilliant rose colour.
Boula de Nanteuil, crimson purple, large.
Columella, very deep rose, margined blush.
Grandissima, a superb brilliant crimson.
Kean, a fine scarlet, very perfect.
Mad. Damoureau, compact, large, and deep.
Nelly, a beautiful blush, tinged with fawn.
Orpheline de Juillet, fine black crimson.
Phèdre, a very double and compact rose.
Triomphe de Jaussens, crimson perfect rose.
Wellington, a very fine crimson purple rose.

Of these there are also many novelties, not yet tried by the public; and, indeed, until a Rose has been in England two or three years, we know but little of its real character.

For the striped or variegated kind, we should say—

Aglae Adanson, rose, spotted with white.
Duc de Bassano, red, marbled with white.
Fontenelle, rose colour, spotted with red.
Fornarina, deep rose, marbled with white.
Lavoisier, spotted rose, foliage variegated.
Madelon Friquet, rose, spotted with white.
Modeste Guérin, rose, mottled with white.
New Village Maid, red, striped with white.
Village Maid, rosy lilac, striped with white.
Œillet parfait, white, striped rose and red.
Tricolor d'Orleans, red, with white stripes.
Triomphe de Beauté, violet crimson, veined.
General Bertrand, purple, shaded crimson.

A great influx of these variegated Roses promises us some additional beauties, but not one in twenty are so good as we already possess; a visit to the Rose nurseries and shows will be the most judicious mode of settling their claims to notice.

HYBRID PROVENCE ROSES.

Seedling varieties, supposed to be between the French and Provence:—

Blanchefleur, French white, very beautiful.
Christine de Pisan, pink, beautifully spotted.
Cleopatra, very handsome pale flesh colour.
Duchesse d'Orleans, blush rose, pink centre.
Emerance, pale lemon colour, perfect.
Enchanteresse, superb deep rose, perfect.
L'Ingénue, white rose, with buff centre.
Laura, superb rosy blush, very perfect.
La Ville de Londres, large bright rose.
La Volupté, fine perfect deep rose colour.
Mrs. Rivers, pale flesh colour, very fine.
Semilasso, large, perfect, deep-red spotted.

These descriptions must be taken as comparative, and not strictly as they are given. A perfect Rose, among the immense number of literally worthless things, must only be taken to mean that the Rose is one of the best, and far superior to the hundreds we omit. A perfect Rose would, according to the properties laid down, be a prodigy.

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* Rivers's Rose Catalogue.

Hybrid Chinese Roses.

Another set of seedling varieties, which by any other name would smell as sweet; however, as they have been so classed, the pretended origin is mere assumption. It has been said that this family differs more from itself than many of the families differ from one another. Of this family the following may be taken:—

Brennus, double, large, and well-formed.
George IV., dark rose, prolific bloomer.
Grilony, purplish slate colour, good form.
Petit Pierre, very large, and very double.
Victor Hugo, fine lilac-coloured rose, large.
Chenédolé, vivid crimson, large and fine.
Comtesse de Lacepède, pale silvery blush.
Duke of Devonshire, lilac, striped white.
Hypocrate, perfect brilliant rose, very fine.
Lady Stuart, silvery blush, very fine.
Madame Plantier, white, and very perfect.
Marjolin, blackish crimson; darkest rose.

All this class form excellent Pillar-roses, on account of their free growth and abundant bloom; yet they are not classed among Climbing-roses, but as a family whose name indicates nothing of their habits.

Hybrid Bourbon Roses,

belonging to the same family, but separated recently in the catalogues.

Belle de St. Cyr, bright rose colour, fine.
Col. Combes, red, occasionally spotted.
Charles Duval, bright rose colour, good.
Lady Montgomery, pale rose, very fine.
Paul Perras, brilliant shaded rose, fine.
Richelieu, very bright rose, distinct, fine.
Sylvain, bright crimson, very perfect.
Great Western, deep-red crimson, robust.

Rosa alba, *White Rose*,

is a family comprising Roses of all colours; but because the supposed original was white, they are all to be called white, be their colours what they may. Of the varieties put down under this distinction, we will mention—

Attila, brilliant rosy crimson, and large.
Duc de Luxembourg, flesh, with rosy centre.
Fanny Sommerson, very double rose colour.
Félicité, French white, fine and distinct.
La Séduisante, brilliant rosy blush.
Princesse de Lamballe, pure white, early.
Queen of Denmark, large, superb blush.
Marie de Bourgogne, pink, spotted flesh.

Damask Roses.

If the Rosa Alba family contains crimson and purple and damask Roses, the family called damask has plenty of variety, not omitting white. The best of these are—

Bachelier, very large and very double rose.
Coralie, white, with rosy centre, pretty.
La Chérie, flesh colour, with pink centre.
La Ville de Bruxelles, rose, glossy foliage.
Lady Fitzgerald, light brilliant crimson.
Madame Hardy, one of the best white.

Sweet Briars.

Double-margined Hip, white, shaded with pink, and fine.

Riego, the most fragrant of roses.

Austrian Briars.

Double Blush, salmon blush, buff centre.
Harrisonii, bright yellow, abundant bloomer.
Williamses, double yellow, and pretty.
Persian Yellow, deep yellow, beautiful.

Double Yellow Rose, *Rosa sulphurea.*

One plant should be tried.

Climbing Roses.

These are split into many families. Among the Ayrshire kind—

The Queen of the Belgians, pure white.
Dundee Rambler, white edged with pink.
Ayrshire Queen, purple crimson.

Rosa multiflora.

These are as unlike one another as two distinct families; but the following may be tried:—

Grevillia, or *Seven Sisters*, changeable from crimson to purple, blooms in bunches; requires protection in winter.

Laure Davoust is one of the finest climbers we have; and we are informed by Mr. Rivers it grows in Geneva thirty feet high.

The mode of protecting these, when on pillars, is to tie furze round them, and withdraw part of it in March, and the rest in May.

Evergreen Roses.

Adelaide d'Orleans, bright foliage, pale rose.
Banksiæflora, beautiful small double white.
Donna Maria, fine compact double white.
Félicité Perpétué, beautiful cream-coloured.
Myrianthes, pale, delicate flowers.

Banksian Roses.

White Banksian; Yellow Banksian.

Hybrid Climbing Roses.

The Garland Rose, a variety, with thousands of small yellowish flowers.

Astrolabe, a bright very desirable rose colour.

Damask Perpetual Roses.

Antinous, deep purplish crimson, very fine.
Bernard, pink, very fine dwarf, fragrant.
Crimson perpetual, beautiful crimson.
Striped Crimson perpetual, pink, striped.
Louis Philippe, noble dark purple flowers.

Hybrid Perpetual Roses.

Aubernon, brilliant crimson, very fragrant.
Calliope, cherry red, streaked with white.

Dr. Marx, rosy carmine, large, perfect.
Duchess of Sutherland, bright rose, mottled.
Lady Alice Peel, beautiful deep pink rose.
Madame Laffay, splendid rosy crimson, fine.
Prince Albert, dark velvety crimson, fine.
Prudence Ræser, pink, with fawn centre.
William Jesse, large, crimson, lilac tinge.

OTHER PERPETUAL ROSES,

which the dealer cannot trace to any family:—*La Miniature; Perpetual Scotch; Stanwell Perpetual.*

BOURBON ROSES.

Souvenir de la Malmaison, flesh, fawn.
Deuil de Duc d'Orleans, black crimson.
Alcidalie, large white rose, very double.
Anne Beluze, pale rose, perfect and fine.
Ceres, bright rose, handsome and dwarf.
Crimson Globe, purplish crimson, dwarf.
Desgaches, bright rose colour, very fine.
Emile Courtier, deep rose, double, good.
Grand Capitaine, velvety scarlet, dwarf.
Lilacea Grandiflora, large good lilac.
Madame Lacharme, white, tinged blush.
Madame Margat, very bright and perfect.
Madame Nerard, delicate blush colour, and very handsome.
Queen, very handsome fawn-coloured rose.
Reine du Congrès, pale blush, and perfect.

CHINESE ROSES.

Aimée Plaintier, fawn colour, with blush.
Alcine, purplish red rose.
Archduke Charles, rose, changing to crimson.
Carmin Superb, deep crimson, handsome.
Comtesse de Moloré, very distinct maroon.
Desfontaines, pure white, and very perfect.
Eugène Beauharnais, bright amaranth.
Madame Bureau, white rose, very distinct.
Meillez, white, tinged with lemon.
Mrs. Bosanquet, pale flesh, wax-like, and fine.
Napoleon, blush, very large and good.
Sulphurea Superba, pale sulphur colour.

CHINA TEA-SCENTED ROSES.

Barbot, fawn-coloured rose, of large size.
Bougère, glossy bronzed rose, very large.
Comte de Paris, pale blush, large.
Devoniensis, creamy white, with rose colour.
Eliza Sauvage, pale yellow, orange centre.
Josephine Malton, large shaded white rose.
Moiré, cream, with fawn colour and rose.
Pactolus, lemon, bright yellow centre.
Safrano, bright fawn-coloured rose.
Smith's Yellow Noisette, straw, with lemon.
Triomphe de Luxembourg, buff rose, large.
Yellow China, straw colour, and handsome.

NOISETTE ROSES.

Boulogne, brilliant deep purple, and fine.
Camellia Rose, rose, distinct and pretty.
Clara Wendel, pale fawn, changing to straw.
Cloth of Gold, pure yellow, large and fine.
Comtesse de Tolosan, white, with rosy centre.
Elizabeth, nearly white, very double.
Jaune Desprez, bright fawn colour, large.
Lemarque, straw colour, with lemon centre.
Lemarque à Cœur Rose, white, with fawn.
Madame Jouvain, bright rose, buff centre.
Solfatèrre, bright sulphur, and very large.
Vitellina, creamy white, buff centre.

MUSK ROSES.

Rivers' Mush, pink and buff.
Ranunculus, pure white.

ROSA MICROPHYLLA.

Rivers' Grandiflora; Verdier; Rubra.

MACARTNEY ROSES.

Maria Leonida, white and beautiful.
Scarlet Maria Leonida.

ROSA BERBERFOLIA.

Only the original Persian, called also Hardii, single, to seed from.

MINIATURE CHINA ROSES.

Blush, blush colour.
Caprice des Dames, pink.
Dieudonne, red.
Gloire, crimson.
Jenny, brilliant rose.

We do not pretend that those we here mention, and which comprise about a tenth of the number in popular catalogues, are all good,—far from it. Some of the families have hardly a good Rose among them; but by reducing the number from which a young rose-grower has to select, we have greatly lessened the difficulty of choosing, because they may almost take from one to the whole of any of the selections, and be satisfied they have some of the best. But there are some families better than others.

We have observed, in a recent publication, some characteristics of the Rose, given by a tolerably good though rather prejudiced authority, Mr. Rivers, junior, of Sawbridgeworth. He mentions, however, a few which are remarkable for peculiar properties, and they show at once the folly of continuing the present divisions, or rather, of attempting to keep up the present family distinctions. He has given six of the largest, six of the strongest, six of the brightest, six of the sweetest, six of the earliest small, six of the earliest large, six of the most brilliant, six of the latest, and six of the finest shaped.

SIX LARGEST ROSES.—La Reine, rosy pink; William Jesse, light crimson tinged with lilac; Souvenir de la Malmaison, pale-flesh tinted with fawn; Calypso, pale rose; Brennus, bright red; Chenédolé, vivid crimson. Now these six comprise two perpetual, one Bourbon, two hybrid China, and one "partaking much of the character of a hybrid Chinese." Yet these are all fine noble flowers, and the family distinctions of very secondary, if of any consequence, and certainly difficult to recognise, except by those very well acquainted with the minutiæ of unimportant differences. We are well pleased to see the cultivator, who gives us in his SELECT CATALOGUE more than thirty distinct families, as he calls them, and some of these families with several divisions, enumerating in all nearly eleven hundred varieties,—condescend to inform us that the foregoing six are the largest, and next telling us that the following are the

SIX OF THE SWEETEST ROSES.—Riego, a sweet briar; Crested Provence, an ordinary rose colour; the common Cabbage-rose, ditto, an old favourite; the common Moss-rose, ditto, also a universal favourite; Crimson Perpetual, bright crimson; and Prince Albert, purplish crimson. Here we have good reason to praise the taste of the public. Fragrance is a decided property in a Rose; and here we have to acknowledge that the two greatest favourites of the common people are the old Moss and old Cabbage-roses. These six comprise no less than four families—one is a perpetual; one is a hybrid perpetual; one hybrid sweet briar; two are Provence; and one moss. To proceed, let us take next

SIX OF THE MOST BRILLIANT RED ROSES.—Vesta, a very old variety; Rouge Eblouissante, or Assemblage des Beautés; Eblouissante de Lequeue; Feu Brilliante; Grande Capitaine; and Gloire de Rosamène. And here it is worth mentioning, that all the more vivid reds are wanting in doubleness. Four of this six belong to the family of Rosa Gallica, and two to the family of Bourbon. We come next to

SIX OF THE MOST VIGOROUS GROWING ROSES.—Great Western, deep reddish crimson; Hortensia, bright pink; Charles Duval, bright rose; Paul Perras, brilliant shaded rose; Elise Mercœur, rose colour with red centre; and Chenédolé, already described in the first six. Here we have five hybrid Bourbons, so called, and one hybrid China. Of course these extremely rapid growers are fittest for climbing, though used as standards. We next come to something after our own hearts, if the description be true, that is to say—

SIX ROSES OF FINE SHAPE.—Triomphe de Jaussens, brilliant crimson; Kean, nearly scarlet; Coupe d'Hébé, delicate rose colour, often shaded with pink; La Volupte, deep rose; Rose Devigne, a delicate pink; and Boula de Nanteuil, crimson purple. We doubt if these come nearly up to the properties; but still, upon Mr. Rivers' authority, they are selected from nearly eleven hundred. The next we come to are

SIX OF THE EARLIEST SMALL ROSES.—Spong's Rose, bright rose colour; Rose de Meaux, an old acquaintance; mossy Rose de Meaux, or Pompone, beautifully mossed; Persian Yellow, bright gold colour; Chinese Sweet-briar, bright pink rose; and Burgundy, an old dwarf rose. These six are small. We come next to

SIX OF THE EARLIEST LARGE FLOWERS.—George the Fourth, Ne Plus Ultra, Fulgens, Blairii No. 2, Magna Rosa, and Triomphe d'Angiers,—all hybrid China Roses. And lastly we arrive at

SIX OF THE LATEST ROSES.—Madame Laffay, rosy crimson; Lady Alice Peel, deep pink; Baronne Prevost, rosy blush; Doctor Marx, rosy carmine; Duchess of Sutherland, bright rosy blush; and Mrs. Elliott, light crimson tinted with lilac. These are perpetuals, or hybrid perpetuals; and we must admit, making all allowances for the difference of opinion that might be entertained, that these tests will be useful in more respects than at first sight strikes one.

Williams's Double Yellow Briar.

No person has grown Roses more extensively than Mr. Rivers; few people think it worth while keeping so many varieties; few persons' catalogues are so extensive; and it is something to obtain an admission from one of such extensive experience, that these selections are the most distinguished for their peculiar features of so large a collection as that at Sawbridgeworth. It will be seen that many, or most of them, are amongst our selections, we having taken the families as they came before us, and given most of the number that were recommended in a treatise of 1843, and purchased by us from such recommendation.

By stating to the Rose-dealer the purposes for which you want the Roses, and giving him a list of the foregoing, with the number you require out of them, he will be able to serve you with satisfaction to both parties. For instance, if your object be to show single blooms, as Dahlias are shown, it is no use his giving you semi-double kinds; though in the present dearth of finer flowers, we have put some which are not what they ought to be in that respect. However we are to presume that the first step towards Rose-growing is to procure the Roses, and we will suppose the cultivator has to plant them, that being the most important part of the business; for if they are planted badly, or in bad soil, they will not do well. The first consideration is, then, the

PROPER SOIL FOR THE ROSE.

The proper soil for the Rose is strong rich loam, and well decomposed vegetable mould, or cow-dung or horse-dung; but as we are too often already provided with the kind of soil we are obliged to use, and the gardens and situations for our Roses are generally ready made, all we must do is to modify and supply the deficiency, if any, as well as we can. If the soil be light, holes must be dug, and loam and dung forked in at the bottom of the hole, as well as the hole be filled up with the same mixture; for troublesome as this may be, it is the only way to secure a good growth and bloom, and it is next to useless to plant roses in poor light soil without this precaution. Kitchen gardens well kept up, will always grow the Rose well, and unless the soil be very poor and very light, a good spadeful of rotten dung mixed with the soil where the Rose is planted, will answer all the purpose. Among the evils of poor soil for the Rose, it is not the least, that it frequently makes the flower that would otherwise be double come single or semi-double, so as to destroy all identity of the variety by its bloom; and although many thousands of Roses not worth a penny have been sent out, many others which did not deserve it have been condemned, because the party who was growing them knew nothing about their cultivation, and starved them into a false character. As, however, it is difficult to give the rose too rich a soil, it may be as well, even if you think it good enough, to work in a spadeful of dung with it; for it will do no harm, even if the state of the ground be ever so good. We have no doubt that the Rose would flourish in rotten turfs, and when they are to be grown in pots it is practicable to give them this invaluable stuff to grow in; but unless it be a recently turned-up pasture, there is nothing approximating to it out of doors, and even this is far less supplied with the rotted grass, than when turfs are cut thin to rot for use. As a general principle, then, it may be laid down that the Rose requires rich soil; and that if you have it not, you must change the nature of what you have, by means of dung, or loam, or both.

PLANTING THE ROSE.

To plant the Rose properly, the root must first be examined, and every particle of it that has been bruised should be cut off with a sharp knife just above the bruise; all the torn and ragged ends should be made smooth, and cut away as far as they are split or damaged. If any root has been growing downwards, it should be shortened up; for it is better to discourage any from growing downright. This preparation being made, and the holes dug large enough to take the root in without cramping it, fork or dig up the bottom of the hole to loosen it, and, if necessary, to make any addition to the present soil, to mix it properly with the soil taken out, and work it some way into the soil at bottom. Let one hold the tree or plant, if it be too large to manage properly alone, and the other throw in the soil between the roots. By moving the stem backwards and forwards, and pulling upwards a little, it is easy to work the soil well between the roots, and on this much depends. When it is adjusted, the top of the root must be pretty close to the top of the ground; there must be none of the stump or stem buried; and when trodden down, the root must be fixed steady and solid. We have seen a group of standards planted by a French Rose-grower, and because the stems were not sufficiently uniform to do by ordinary planting, he sunk some of them nearly a foot into the ground, while others were kept at the full height. They all lived after a fashion through the summer, but bloomed weakly or not at all; and before the next spring, many of the sunk ones had died, the stems being soddened and wet from the crown of the root to the place which was above ground. If you have to manage the planting by yourself, you must, as soon as the hole is prepared, lay hold of the stem just above the root, and return the soil with your other hand, continuing to move the head first one way and then the other, until the soil has worked well between the roots, when it may be trodden in as mentioned before. Dwarf plants there is no difficulty in planting, but you must be careful to keep the crown of the root near the surface of the ground; the treading of all in fair and solid being a necessary operation with all the kinds of plants. With the standard sorts you should drive stakes into the ground pretty firmly, and fasten the stems of the Roses to them, to prevent the wind from removing them; as when your roots have been once firmly trodden in, you cannot move a tree one way or the other without breaking the fine fibres, and thus lessening the capacity of the root to carry strength to the head. If you are planting a group of standard roses, you should place the highest in the centre, and the lower ones nearer the outside; in fact, a handsome clump of Roses might have six feet standards in the middle, four feet six inches in the next row, three feet ones nearer the front, and eighteen inch ones outside; these, if at proper distances, and with picked sorts, of something near the same habit of growth, will form a superb mountain of Roses in the proper season.

Rosa Banksiæ Lutea.

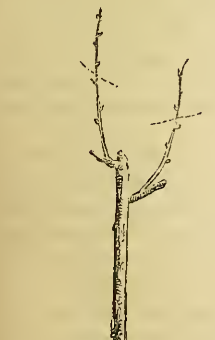
Rows of Standard-roses may be planted with advantage on each side of a coach road in a park, or on both sides of a path on a lawn, but at proper distances, so that each shall form a specific object in itself, as well as a portion of a row of rose-trees. Roses also form very beautiful objects planted in isolated situations on lawns, and especially when the sort of rose is distinct from others, or blooms at different periods; for whatever forms a portion should be of a similar habit to the rest of the whole. Thus, if a particular walk in a garden or shrubbery were bounded by two rows of Roses, they should all flower at once. If a clump of Roses is planted, they should flower at one season. A mixture of spring, summer, and autumn roses would be very bad; the place would never look right; therefore some pains must be taken to keep all those which flower the same period of the year together. One portion of the garden may then be always garnished with Roses, and it is far better than having Roses straggling about, with here and there a flowerless one among those in bloom, or a blooming one among those not in flower. Planting of Roses which are on their own bottoms, or worked low down for dwarfs, or for climbers where flowering wood is always wanted from the ground, differs in no wise from any other planting except as to the situation, which should be chosen not too much exposed to the wind, as in the most sheltered spot they always have enough to encounter. They must be planted firmly, and in good soil; and whatever they have to climb up should be firmly placed by rights before the Rose is planted, but certainly before it shall have grown much, as the roots spread a good deal, and if damaged by violence after the plant has begun to grow vigorously, it will receive a check which it may not get over the same season.

PRUNING FOR BUSHES.

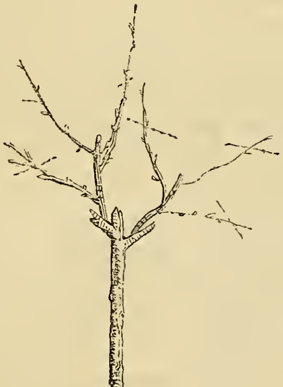
The principal objects to be attained by pruning Roses are,—first, to compensate, by reducing the part to be nourished, for the loss of the root that has to nourish it, which loss, greater or lesser, is always suffered by removal. The proper way to do this pruning depends much on the state of the plant when you have planted it. If it be very bushy, cut away all the weaker branches, leave not more than three or four of the best of the shoots, and shorten even those down to a few eyes. If you wish the plant to continue dwarf and bushy, you may cut down to the last eye or two of the new wood, but leave no thin half-grown shoots on at any rate. If the plant is a matured bush, with numerous branches, and pretty strong generally, shorten the new wood down to two eyes, which will show what more you need do. It may be found that you have then a great many more branches left on than you require; cut one half of them close off, and that half must be the thinnest; but it may be that the plant will be improved by cutting some of the main branches clear away, and all that are on it; for Rose-trees and bushes, like every thing else, are easily spoiled by bearing too much wood, and being over-crowded. The regular Climbing-rose is often required to make as much show as possible the first year of planting; but unless they are removed with the greatest possible care, they ought to be cut almost to the ground, and thinned out also. None but the strongest wood ought to be allowed to remain on the plant, and if this be not of quite first-rate excellence, it is far better to cut out all the weak branches, and cut down the strong ones to two eyes each.

PRUNING STANDARDS.

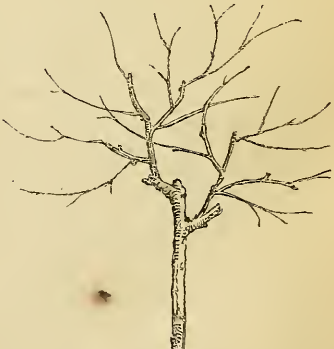
With regard to Standard-roses, we cannot help thinking, from all we have practised and seen practised, that a large portion of Standard-roses are grown altogether upon a wrong principle. A Standard-tree, to be handsome, should be as wide in the head as its entire height; and although upon the present system of pruning them, they enlarge a little every year, they are not kept in a proper form, nor properly pruned. When your Standards are planted, you need do nothing to them until April; then cut all small shoots off close, that is to say, clear them right away; cut down the strong ones to two, three, or at most four eyes, care being taken that the top eye is pointing outwards; the object of this is to obtain strong branches growing outwards, to make a wide head. As the shoots grow, notice the best and strongest that are growing in a position to widen the head, and leave them to make all the growth they can; allow any shoot that is growing up strong in the centre to grow also; and further, a most important point, rub off, or cut off with a very sharp knife, all weakly growing shoots, all that grow inwards and cross the head, and wherever two cross each other, remove the weakest. The branches that grow outwards will be good enough and strong enough in one season's growth to leave any length you please towards making a proper sized head; but as five or six of these branches will not make a full head, the next season they may be shortened to half their growth, taking care that the end bud must be an under one, for all the tendency of the Rose is to grow upwards, and it is only when the natural growth is outwards or downwards that the weight prevails to keep it in a horizontal or drooping position. This second year, and indeed every subsequent year, every branch that does not assist to form a handsome head without crowding, must be taken away, and the younger it is when taken, the more good its removal does, because the other branches get the better. With regard to any one or two, or even three upright branches, though one strong one is worth three weakly ones, they may be shortened down so that two or three good eyes may be fairly above the other branches, and that when they grow outwards the next season, they may help to fill up the head of the tree above; when the eyes begin to shoot, rub out all that come where they are not required, and leave those of which you are yet doubtful as well as those you know will be wanted, because it is at this period you have such control by driving the whole strength of the tree into the branches that are wanted. In this way you proceed until the head of the tree is the proper form and proportion, instead of, as we now see them everywhere, a small, pimping, ungraceful head to a tall stem or trunk. When once it has arrived at this perfection, which with very little care and attention it will, you may cut back every years' wood to two eyes; cut out every weak shoot altogether, if you have not rubbed it off in the bud; cut out all that are in the way of free growth for the rest, and when any portion is confused by reason of the number of spurs or shortened branches left on, clear away a bit by cutting them off. Always remember that Standard-roses for appearance should not be too closely pruned; but for showing, when the individual blooms are shown, a multiplicity of flowers is against size. We can hardly recommend too strongly, the necessity of what we shall call spring pruning, which is, in fact, nipping the mischief in the bud, watching the development of the newly coming branches, and removing all but the number there is good room for; and as this has not been



First Year's Growth of Bud.



Second Year's Growth of Bud.



Third Year's Growth of Bud.

treated on at any length, if at all, we may fairly request attention to it.

The three cuts which are in illustration of this article, though not very accurate, show the first year's growth of two buds placed in a stock, with dotted lines at the place we should cut them ; the second year's growth after such cutting, with dotted lines where we should cut them again ; and the third year's growth is indicated by lines which give some idea of it. But neither of these cuts are exactly what we like ; first, because our pen and ink sketches were imperfect, we being unable to draw exactly what we wanted ; and, secondly, because the artist, who could have drawn it, did not know what we wanted. There is enough, however, done to assist in our lesson on Pruning Standards, though not to the extent we wished.

PRUNING AND TRAINING PILLAR ROSES.

Although we have touched on the pruning of bushes, and upon the pruning of climbers when first planted—it only related to the mere operation of pruning them for growth, in the position they were to remain ; and here, for the sake of the poor Roses themselves and the pillars they are to ornament, we will suppose they are cut down to the ground, or nearly so, and have made a fresh growth, or rather, are making fresh growth. Pillars for Roses ought to be a foot in diameter, and are best made of trellis work or rods of iron, or if it must be so, of wood ; but they ought to be one foot through. As the leading shoots come, they ought to be wound spirally round the pillar, at such distance from each other as will enable them to fill up the space between with foliage ; their leading shoots then constitute the tree, and all the side shoots bear their blooms, and form a pillar of Roses. We do not mean that this is all done in a year, though some kinds go a long way towards it ; here, as in all other cases of Rose-pruning, the little weak shoots must be removed, the strongest left on all the way up, and should be shortened to two eyes. If the tops here die down at all, shorten them to the top strong eye, not to the top eye, for several near the top may be found weak, and they would never be otherwise, whereas the stronger one will grow fast and soon supply the place of the old top. When the buds first show in spring, it will be right to go over the Roses carefully to remove any that are in the way, and the growth of some Roses will be found so different to that of others, that one sort will want enormous room to develop its shoots and blooms, while another will make but short branches and bloom abundantly. These characteristics will be discovered in a year's growth, if not well explained before hand, and the provision can be made accordingly. Many Pillar or Climbing-roses are made to run over arches from pillar to pillar, or along festoons from pillar to pillar: the best way to manage those parts which form the arch or the festoon, is merely to thin out their weak branches without shortening their strong ones, because they will bloom more abundantly, which is the great charm; and the loose and free manner in which they hang about, will be to their advantage, so they be kept within bounds a little.

PRUNING AND TRAINING OF ROSES ON FLAT TRELLISES, WALLS, AND FRONTS OF HOUSES.

The management of this family is very similar to that of Pillar-roses, except that the leading shoots must be encouraged to grow the best way to fill up the space allotted to the plant, for which purpose it will be advisable, in some cases, to train the strongest two shoots horizontally right and left along the bottom ; or if the space to cover be only one way, to train one strong shoot along the bottom, and turn it up at the end: if it reach further, the rest of the strong shoots may be fanned out at equidistances, and all the weak joints removed. The next year rub off the buds that are coming where they are not wanted. Allow any strong shoots that come up from the bottom horizontal shoot, to grow as much as they will, but no weak ones. A fast-growing Rose will soon cover a house front, a trellis, or wall, and flower all over. When the space gets filled, you must continue cutting out, from year to year, all thin spindley shoots, and spare the strong ones, so that the strongest eyes only are developed instead of all of them ; and the roses are closely set to their wall or trellis, instead of hanging lolloping about; the very thing which is good on a pillar, or an arbour, or over an arch-way, or on festoons, being the reverse on a flat surface. As a never-failing operation, however, in all cases, the weak spindley shoots may always be removed, whether the strong wood be shortened or not.

POTTING DECIDUOUS ROSES FOR FORCING.

The nearer you can imitate planting in the open ground the better. The soil should be the same or richer, with dung chiefly, because you cannot water soil without washing away, in some measure, whatever it is impregnated with that is soluble. By a parity of reasoning you cannot moisten with water impregnated with any thing, without imparting the virtue or mischief of the solution to the soil. It is the best way to use half of rotted turf and half of rotted dung ; if it be not light enough to allow water to pass freely, add a little turfy peat, broken through a sieve that would pass a hazel nut. Trim the roots, to get rid of all bruises ; and, in the first instance, choose plants whose roots are within a moderate compass, for pot culture, and well taken up. Select pots that will receive the roots without much cramping; carefully put the soil between and among the fibres and larger roots; strike the pots on the potting table, and poke the soil down so as to be firm. If the Roses be dwarf, follow the directions about pruning at once, and let them be placed in a cold frame watered, to settle the earth about them, and covered up. This should be done from November to February, when those for forcing should be put into the greenhouse, gently increased in temperature, well watered, and kept growing hard; any buds that show should be removed, and they should be allowed to complete their growth, and then plunged in the open ground, and there the wood be permitted to ripen. When the leaves have fallen, and the wood is fairly ripe, they may be pruned, by removing all the weak shoots, and shortening the strong ones; the balls turned out to examine, and if matted with roots, pots a size larger be given. They may then be placed in a cold frame, plunged to their rims, until the period you want to force them. They will flower better the second year than they could have flowered the first, and if the blooms are all picked off again as fast as they show, instead of being allowed to perfect themselves, the growth will be more free; and by growing hard to complete it early, and leaving them out again to ripen, they will allow of being pruned into a handsome form, being carried into the house sooner, and will flower most abundantly, instead of having one or two sickly shoots with their miserable half-starved blooms. At the end they will have as many as you please to leave eyes for, pruning them the same as you would standards or bushes out of doors, and the blooms will come as rich, as handsome, and as well-coloured as any in the open air. Roses may then be forced at almost any season, only they ought to undergo the same forcing a season or two without being allowed to flower, that they undergo the season they are to be forced into bloom. And this will answer season after season when they are once well-established, for they require only the usual shifts of plants, which have their balls matted with root: but of the forcing more hereafter.

POTTING FOR SHOW.

As it is at length the fashion to show Roses in pots, the only proper plan of showing any but single blooms, face upwards, the plan of potting cannot differ from those potted for forcing. Presuming that if they are late roses and require forcing, they will be treated after the plan above mentioned, so far as the potting is concerned; the difference between what the perfectly hardy and summer or autumn blooming Roses will require after potting, as we have directed, is to be put out in an open situation; and if standards, they should be fastened to a rail or trellis, as well as being plunged in their pots, that the wind may not disturb them. Here they may be protected various ways: a mat thrown over the head of a rose protected it, though not a very hardy one, against the last winter's frost. A wisp of straw tied at one end, and opened cap-like over each and among the branches of Roses, protected them a good deal, and probably, had they not been autumn-pruned, might have protected them entirely from mischief; but, as it was, some of the pruned branches died back, though the unpruned ones did not.

Rosa Microphylla.

POTTING THE SMALL, THE SMOOTH WOODED, AND CHINESE VARIETIES.

Here, from the first, the soil should be one-third rotted dung, one-third peat, and one-third the loam of rotted turf. In this stuff the most delicate will succeed. From the period of their having struck root, they can hardly do wrong if potted in this soil, in a proper sized pot, with ordinary drainage. Small plants should be placed in pots no larger than the roots require to hold them, with a moderate share of earth to live in. This kind of Rose should be kept growing in a cool frame or greenhouse, or pit, with not much moisture; plenty of air in dry mild days, and a refreshing shower when it is warm. It is safer to plunge them in ashes, if you can, up to the rims of their pots: it keeps them moist longer than if the pot is exposed, and the frost cannot so well reach the fibres of the root, which, when the pot is exposed, it mostly does, in bad weather; and though it perhaps does not kill them, it makes them weakly for some time. In this they may grow from time to time, and be shifted from one sized pot to another, requiring only that the buds should be plucked off directly they show, so long as the plant is wanted to grow fast.

FORCING EARLY ROSES.

This art consists in bringing the Rose, by degrees, out of its season, as we have half-explained under the head of Potting to Force. We know that a Rose can be potted in January, and made to produce flowers in May; but those who wish to force should know the best way. A Rose, then, for early forcing requires three seasons to be perfect. The first season it should be put into a greenhouse, and from thence into the stove, as early as November. It is sure to grow, no matter what sort it is; and let it grow its best, but pluck off the buds if it have any, yet it should not be drawn; this can be managed two or three ways, but all it requires to prevent drawing is light and air. These will have grown pretty well as large as they can grow, by the time they may be turned out and plunged in the open air. The wood will ripen well in the summer time; and in October, re-pot them into a size larger pots: prune them by taking off all the weak shoots, and all the least valuable of those in each other's way: shorten the best wood to two or three eyes, thinning the inner branches all that may be necessary to give air, light, and freedom to the new wood. Take them into the greenhouse, thence, soon, into the stove. Let the bloom buds, as they appear, be plucked off, and the growth to be perfected again, which will be earlier than the previous season, as they were set growing earlier. Be early in your attendance on them, when they commence growing, so as to remove useless buds, instead of allowing them to form useless branches. When the growth is completed, remove them into a cold frame, to be kept from the spring frosts, but where they can have all the fine weather. In this state they may remain till they can be safely put out in the open air, plunged into the ground, and properly fastened to protect them from wind. In September you may examine the balls of earth, to see if the roots have room; if matted at all, give them another change. Prune the plants well as before; removing altogether such of the present year shoots as are at all weakly, and shortening all the best to two or three eyes. Let them now be taken to the greenhouse, or conservatory, or a grapery, or all in turn, but gradually increase the temperature, till, by the end of October, they may go into the forcing-house, beginning at the temperature the house was that they came from, say fifty to fifty-five, and continuing it till they are fairly growing; then increasing it to sixty, and eventually to sixty-five: rubbing off as before all useless shoots, and giving plenty of air, when it can be done without lowering the temperature. At the least appearance of green fly, syringe with plain water; fumigate at night, gently syringe again in the morning; fumigate gently at night, for too strong a smoke would all but destroy the plants and incipient blooms. In this way you will be clear of the pest without danger of damage, and your reward will be a fine show of blooms on every Rose-tree: strong growth, healthy foliage, handsome plants, and all that can be desired.

FORCING LATER ROSES.

The principle on which the early forcing is conducted must be carried out in full, not only in potting the plant and pruning, but also in the period of removing them. If you wish those a month later to succeed the first, put them into the house a month later, each of the years. If you want others to succeed these second, put them into the house a month later still each year. For nothing has been shown yet in the way of pot Roses, better than were shown seven or more years ago, and all of them have had a weakly drawn appearance, and been anything but creditable to the taste of the gardeners; for they have been staked all over, and thin flimsy Roses on limp lankey stems, bound up to a thicket of unnatural wood. To us nothing is more ungardener-like than this artificial and unnatural mode of supporting every blown stem, with bits of lath or green-painted sticks, a measure perfectly unnecessary with well-grown and well-chosen varieties. It will be a long time before we forget the square rimless boxes of slate, with from fifteen to twenty straight sticks to support a plant which would not support itself. The mechanism and management of the whole was so unprofessional and forbidding, that instead of the Rose being an object of attention, it became a loathsome, disagreeable, and sickly affair altogether, Now, by the plan we have been recommending, the plant is longer growing, stronger in its wood, shorter in the joints, and more abundant in branches, foliage, and flowers. The ordinary mode of forcing contemplates no more than removing a plant from out of doors to indoors in one year: so that, without having the advantage of premature ripeness for two seasons, or even one, it has to perfect its flowers before their time, by great excitement, with a root hardly established. We hold that a Rose, like a grape, cannot, after bearing in the usual season, be changed all at once to early forcing, without great sacrifice of crop, and strength, and beauty. The fact of sudden excitement being fatal to a Rose is demonstrated easily enough by the result: take a strong plant, well-established, from the cold atmosphere and temperature of the ground, into a full-heated house, and every bloom will be blighted in its incipient state. If a decided change like this is universally fatal, which is the fact, every sudden change, and all approaches to it, is proportionably mischievous. We do not, however, mean to say that Roses cannot be forced in a single season, because thousands are so forced and sent to market; and the usual result of such management is, three or four long drawn branches, with a bud or two at the end of one, and sometimes of two, with scarcely strength to open into a flower. We make exceptions to the choice kinds of Roses, in these remarks, and allude only to garden Roses. The China kinds are of a different nature, always growing and blooming; winter and summer, if they are kept in a moderate temperature, are almost alike to them, and those which partake of their habit.

The Village Maid.

THE FORCING OF ROSES OF THE DWARF CHINA KIND.

This family has scarcely any rest in pots, and under protection, it may have merely to be kept over the winter. There is no place so well adapted for them as a cold pit, with a good dry bottom, and shelves near the glass; but a stout shallow box, with a regular garden light on it, placed high and dry on a paved, slated, or warm, gravelled bottom, makes a good shift. The China-rose, and all the short-jointed, smooth-barked kinds that are like them in habit, will strike, bud, graft, grow and bloom, any month in the year. The only thing necessary, is to have plants in all stages, and there will never be any want of flowers. In the greenhouse they continue growing on, and blooming at all times; but they cannot be kept too cool generally, and if abundance of flower is required on a plant, it must have a previous rest, and shift to a warm temperature, and if matted in the roots, a large pot, and the heat gradually increased until it will bear that of a moderate stove. All the new young growth will flower about the same time, or at least sufficient of it to well decorate the plant. Cuttings may be struck in the spring, planted out in beds, six inches apart, to grow a little; the tops be pinched off, and the buds taken away all the summer, to make them bushy; and they may be potted up into forty-eight sized pots, half loam, a fourth peat, and a fourth cow dung; trimmed a little into shape, and placed in the shade a while. In September they may be put into their frames, covered up at night against frosts, and opened in mild weather, until the middle of November; they may then be removed, a few at a time, into an increased temperature, and about a month apart. They will be found to bloom well, and succeed each other admirably, all through the winter and spring, before those out of doors can even fairly start into leaf; the only care required being to syringe them against the green fly, and if that does not keep them under, fumigate them; and to see that they never suffer from want of water. These, however, like the summer Roses, will force better the second year than the first, by shifting them into pots a size larger, trimming the plants into a proper shape, taking away the weak shoots, letting them rest, and giving but little water towards the end of the summer, except to keep them from actually flagging; putting them in their frames and removing them into heat as before, a few at a time, and a month apart. Mr. Rivers describes a pit for forcing Roses, and we will give the substance of his plan. It is simple, and if you build on purpose, you may as well build right as wrong; but those who have houses and pits already built, will find the Rose not a very dainty inhabitant. We have seen some thousands of them, beautiful plants, at Gaines's, at Battersea, healthy and handsome as they could be, in a very commonly constructed house, that would do well for anything else. All the Rose wants is the proper degree of temperature: begin say at forty-five, and increase by degrees to sixty, and there will be nothing very wrong.

Mr. Rivers, in describing his pit for forcing Roses, says, "A pit ten or twelve feet long, and eight feet wide, just high enough to stand upright in, with a door at one end, and a sunken path in the centre, a raised bed on each side of the path, and an eighteen inch Arnott's stove at the further end opposite the door, with a pipe leading into a small brick chimney outside, (a chimney is indispensable,) will give great abundance of forced Roses from February to the end of May. To ensure this a supply must be kept ready; so that, say twenty may be placed in the forcing pit about the middle of December, in like manner about the middle of January, and the same about the middle of February. They must not be pruned until taken into the house, when each shoot should be cut back to two or three buds or eyes, the latter for stray shoots. The fire should be lighted at seven in the morning, and suffered to burn out about the same hour in the evening, unless in frosty weather, when it must be kept burning until late at night, so as to exclude the frost; and for this purpose double mats should be placed on the lights. The thermometer should not *by fire heat* be higher in the day than 70° during December, January, and February; at night it may sink to 35° without injury. The temporary rise on a sunny day is of no consequence; but no air should be admitted at such times, as the plants will extract themselves, and accordingly shed their leaves. When the sun begins to have power, and in sunny weather towards the end of February, the plants may be syringed every morning about ten o'clock with tepid water, and smoked with tobacco at night on the least appearance of the aphis, or green fly. To ensure a fine full crop of flowers the plants should be imbedded one year in pots, and plunged in tan or saw-dust in an open exposed place, so that the shoots are all exposed. The pots must be often removed, or, what is better, place the pots on slates, to prevent their roots striking into the ground; but with the hybrid and damask perpetual Roses, if only potted in November previous, a very good crop of flowers may often be obtained, and a second crop better than the first; for the great advantage of forcing perpetual Roses is, that after blooming in the greenhouse or drawing-room, their young shoots may be cut down to within two or three buds of their base, and the plants placed again in the forcing house, and a second crop of flowers obtained. The same mode may be followed with the Bourbon, China, and the Scented Roses: with the latter indeed a third crop may be often obtained." Mr. Rivers goes on to say, that as the season advances air may be given, syringing must be continued, and that plants making their second growth should be watered once a week with manure water, which manure water is recommended to be made of 2 lbs. of guano to ten gallons of water,—a strength we should think highly dangerous, some kinds of guano being twice as strong as others, and upon the whole guano being the most varied and unsatisfactory of all manures, and therefore the least to be depended on. There are some guanos that would, at 2 lbs. to ten gallons, destroy many kinds of Roses on their own bottoms. There is a vagueness in the foregoing directions as to a forcing-house,—there are doubts in our mind whether an Arnott's stove would heat a house up to 70° in December and January with wholesome atmosphere, unless, indeed, it was made to boil water upon the tank system, in which case we see no very great difficulty in the matter. Our next objection is to the heating of the house up to 70° in the day at starting. We remember some Roses which went from a popular nursery into a first-rate establishment, where the gardener was not at all used to forcing Roses, and he, by putting them into a house of 70°, forced every bud blind; and we have invariably found that when the transition was great at first, there was a failure of bloom.

THE DOUBLE-YELLOW ROSE.—ROSA SULPHUREA.

This beautiful and much-admired variety or species of Rose has baffled our very best cultivators. All manner of speculations have been tried by various growers, and none have, as we learn, answered completely. From all that we have seen and heard, there appears to be one well ascertained fact,—namely, that it never blooms well till it has been some years in its place, and that, if it, as it will in some instances, show buds at an earlier period, they will not open freely, and in most cases rot on the branch. This Rose is one of the most double we have, and the bud before it opens is as hard as a solid body. In all cases where they are known to flourish well, the trees are old; and although the gardeners may pretend they do this or that, or the other, the tree itself does it all, when arrived at the maturity which is necessary, and would do just as well without help as with it. Indeed, one that we know of, that seems to do well, has not had a knife to it for years, except to cut some of the flowers, which are so abundant as to fairly cover the whole tree. This Rose requires, then, a treatment which no other one wants: the only theory we know of that is necessary, is good stuff to grow in, plenty of room, and then plenty of time. Mr. Wood, junior, has exhibited bunches of the yellow Rose, which he says does very well with them; and they looked very well, but we doubt if any were cut from the young stock. They have possibly an established tree there, which supplies the exhibition stands; for we never yet saw either a worked plant or a young plant bloom well. This Rose has to contend with two evils in this country—the spring frosts, and high winds; one might almost say a third—heavy rains. It grows early, and frequently has all the first shoots cut back with the frost, or the blighting winds and the heavy rains which prevail sometimes, completely set and rot the blooms.

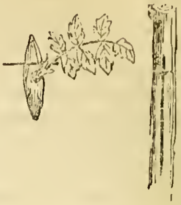
Some gardeners recommend a cool situation to discourage the early growth; this is as much evil as good, for the growth in such situations is more vigorous, and the bloom is thrown too late. The best situation it can have is where it can have no north nor east wind, and this can only be accomplished in some places at the east end of a south wall, where a building or some other interruption intercepting the east wind, secures it all the advantages of early growth: and a protection at night, and on frosty days, may be given without any difficulty by means of the transparent calico. The same material would throw off heavy soaking rains, and keep off a blazing sun. Leave nothing undone that would tend to its advantage, for wherever the early shoots are cut off, the bloom for that season is cut off with it; and to this may be attributed its occasional total failure, even in well-established specimens growing in the best situations. When the blooms are bursting, the calyx should be separated as that of a carnation is, to enable the flower to open even. If you try a plant of this kind, put it into some south-east corner where the soil is high and dry; mix brick rubbish with the loam and dung, say one-third, and then let it take its chance. Prune but little; merely take out weak shoots, and the end of every one that is growing out of its proper limit; and bide your time, for above all Roses it is one which will not be hurried, nor can you by any means that we know of greatly hasten its period of blooming. We remember one worked cutting that was making but sickly growth for three seasons; the third year however there were some buds on one of the branches that was more sickly than the rest, but the tree died afterwards, though the stock was alive.

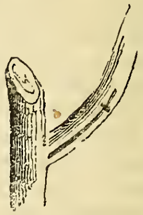
STOCKS FOR PROPAGATING BY BUDDING AND GRAFTING.

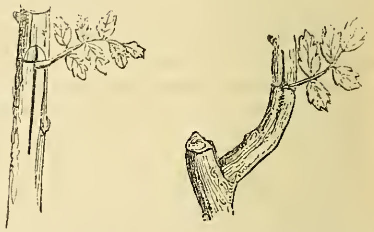
The great call for these articles has made it somewhat difficult to procure them anywhere but at the nurseries; and when you consider you can pick and choose at some price or other, the nurseries are the best places for an amateur to purchase. In some parts of the country the Briers are plentiful, but they are mostly in hedge-rows, and it is somewhat perilous work to grub them up without permission; nevertheless, many men get their living by collecting these for the nursery grounds. The stocks should be procured at the fall of the leaf, and be straight, strong, well rooted and compact. These should be placed in rows, eighteen inches apart from each other, and three feet or three feet six inches vacancies between the rows; they should be staked, or, which is better, stakes should be put at equal distances, and a rail along them, to which rail all the stocks should be fastened by strong ties, the whole being well trodden in after the same manner that new Roses are planted. The preparation of the roots should be in all respects the same, and the stocks are generally shortened before you get them to the height their growth best adapts them for. Here they remain till they begin to push in spring, when all the lower buds must be rubbed off, leaving the three or four that are highest up the stock, to see which will grow best. It will be found that some of these stocks have died down to a considerable distance, but as they are not of the slightest use above the top growing bud, you may, with a strong knife, cut right down to the bud, or leave it till after the summer growth of the buds has considerably advanced. If you have one good branch it will do, but two on opposite sides are better, because you can work both, and be safe if one fails. Several times you must go over these stocks, to rub off the fresh buds that will be springing out on different parts of the stock where they are not wanted; and two good buds near the top are all you need save. You have to remember that all the strength of the plant will go into these two branches, if the others are taken away; but that every leaf that is allowed to grow, besides those wanted, takes greatly from their strength, on which strength the value of the plant entirely depends. If the top shoots or buds happen to be weak in the first instance, compared with some lower down the stock, it is better to rub off the top, and lose a little height of the stock, than to trust to dwindling branches, so that, in this case, your two branches to save might be half way down the stem; and it is better, in such case, to cut down at once to it, that the top may be no more trouble, and may not mislead you in going over them a second time, to cut or pull out your best branches; for the top, so long as you left it on, would be throwing out its green shoots; and being the same height as the general run of them, nothing is more likely. All that is to be done, besides keeping the stocks from throwing out other branches, is to cut away from the roots any suckers that may come up, and which distress the stock nearly as much as dwarf branches. The ground, of course, is to be kept clear of weeds until Midsummer, which is the season for budding, and which is the next subject for consideration.

PROPAGATING BY BUDDING ON BRIERS.

There is no process in the art of Practical Gardening more interesting, nor the fruits of which are more gratifying to an amateur, than budding. The theory is this: at the base of the leaf is a small bud, which, after the leaf falls away from it, becomes prominent, and eventually, if left on the tree, becomes a branch. By taking a leaf off with part of the bark, this incipient bud comes with it, and by inserting this bark under the bark of another Rose-tree, say one of these common Briers, it unites as if it were originally a part of the Brier itself; but the bud retains all the character of the one it came from, and is not changed in the smallest degree by its transfer from its own to another stock. This is the fact upon which all propagation by budding is founded, and, therefore, we have two leading points to consider in setting about this operation: first, we must have the green bark of the stock, into which the buds are to be inserted, rise easily, which it does all the while the branch is green and growing; and, secondly, we must wait until the bud, small and almost imperceptible as it is at the base of the leaf, is old enough to be removed with safety. In a general way, the buds of summer Roses are not ready till nearly Midsummer, and the bark will not easily rise from the wood of the stock much after that. The budding season may, however, be called from the middle of June to the middle of July, and not very much longer: what is meant by the bark easily rising is, easily leaving the wood, so that it would be easy to peel a branch by stripping the bark off. The first thing, then, to look to, is to obtain branches of the Rose tree from which we want to produce other plants. If you obtain these branches before you are ready to use them, plant the thick end in the ground, and do not let the sun come near them, as it would destroy them soon; but they ought not to be an hour longer than you can help unused. Get some bast matting for ties, or very coarse worsted, which some prefer, because it gives way better if the bud swells, and will stand the weather longer. With a very sharp knife, called a budding knife, if you have one, and, if not, any other, and a thin piece of hard wood or ivory, like a diminutive paper knife, you may go to work. The knife is to slit the bark down to the wood wherever you mean to put in the bud, and the piece of hard wood or ivory, with a sort of blunt edge like a paper knife, is to divide the bark from the wood by running it along under the bark, on each side the slit. Being thus provided, go to your stocks with your branches of the trees you want to propagate in your apron, for you ought to have front pockets, and the bast matting should be tucked in the apron string; take hold of the stock firmly, and shorten both the branches to a foot, or even less; then with your knife cut a slit in the bark, within half an inch of the base of the branch upwards, and on the upper side, an inch and a half long; about the middle of this slit make a small cut across; then with your ivory, or thin wood—or more properly, if you have it, with the handle of your budding knife— raise up the bark on both sides; then take the branch of your Rose-tree, from which you take your buds, and with your sharp knife shave out of the branch a thin piece of the wood, beginning half an inch below a leaf, and taking the knife along to come out half an inch above the leaf. This small bit has to be inserted under the bark on both sides, bringing the leaf which is where the bud is, to the exact place where the cross cut is: when it is neatly inserted, take your piece of matting, and place the middle of it across the slit just under the leaf; pass it under, and cross it backwards and forwards along the branch till the bark is completely tied down close, and only the leaf and bud exposed. As the weather at this time is often very hot, it is a good plan to tie a bunch of loose moss over all, and water the moss occasionally the first few days, because it keeps off the burning sun, even if dry, and greatly preserves the newly-disturbed bark. It will be easily seen that the quicker this operation is performed the better, because if the sap of the bud, or that of the raised bark, have time to dry, the union of the one with the other cannot be completed with any degree



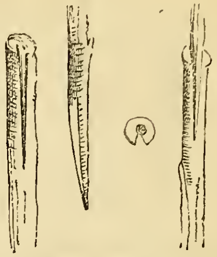




of certainty. The being damped immediately by the application of wet moss will hardly undo any mischief already done; so that a sharp knife, a clean cut, and rapid action are necessary, and can hardly fail. If the bud is cut out of the branch too thick, and too much wood is taken out with the bark and bud, the wood ought to be cut thinner, or pulled out from the bark of the bud altogether; but there is danger in taking out the wood, for it will occasionally bring out the germ of the bud with it. The effect of this would be, that nothing would indicate outside what was wrong, but the bud would not grow. It would look as green, as fresh, and as completely united, as if the germ were there. On this account, we have long discontinued the practice of taking the little bit of wood from the inside of the bud, and with the greatest success. This operation should be carried through all the stocks, and if you have plenty of buds, on each of the branches; because two buds will make a head sooner than one, and if you choose to do so, you may put two different sorts on the same stock. In this case, you must be particular about having two of about the same habit, for a fast-growing one would soon deprive a slow-growing one of all the necessary nourishment; and, besides this, it would grow incongruously, and not be controllable: on the other hand, if you have two of similar habit, and opposite colours, it may be made a very pretty object. But the great value of this delicate, though simple operation, is to make an old China, or other strong-growing Rose, long established, change its face altogether. Many kinds of Roses may be budded on such a tree, by selecting all the strong-growing branches of the present year's growth, putting a different bud in each, and cutting all the other parts of the tree away, leaving the novelties alone to grow; or the buds may be all of the same sort, so it be some choice kind; but different coloured Roses have the best effect.

GRAFTING THE ROSE.

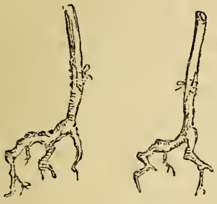
This is by no means so simple an operation, though not a very difficult matter; nevertheless, the pith in the centre of the wood is against it, as well as the discrepancy in general between the stock and the scion. The act of grafting is adopted for the same purpose as that of budding—to propagate particular varieties. It is not so safe nor so certain a mode as budding, but in the spring there is no other means, and as in the purchase of new Roses there is generally a good deal of ripe wood that must be cut off, those who have stocks that are fit for grafting frequently adopt it. There are various modes of performing this operation: one or two ways are applicable to the old wood of the stock; other modes are more adapted to the last year's branches. In the one case, a cleft is made in the stump of the stock, and the wood belonging to the new Rose to be inserted is cut in an angular form to fit it. It is then bound in its place by bast matting, or some other tie, and the joins covered with grafting clay, or, which is more generally used for Roses, grafting wax; a composition formed of beeswax and resin, in equal parts, and a little tallow, to render it easily fusible at a low heat, because the real object of this wax is to melt at a heat which will not hurt the trees, but that will, on cooling, be sufficiently hard to keep in its place, and bear even the heat of the sun without running away. There are various modes of grafting the smaller branches of the stock, that is to say, the branches of last year's growth. One mode is, to cut the branch down to two inches in length, and then cut this short piece down the middle, cutting out the inside of the wood sloping outwards, so as to receive a wedge-shaped graft, which should be about the same size if possible; cut this into the shape of a wedge, and insert it in the stock, making as complete a fit as possible, and be careful that the bark of both scion and stock must exactly join on one side, whether it reach the other side or not; for, unless the barks meet on one side, it will be impossible to unite. It will frequently happen that the scion is smaller than the stock; the one must be used as you have got it, the other you must get as good as you can; and when you have it, make the best of it. Others, in grafting, cut the branch of the stock into a wedge, and the scion is cut to receive it. The effect is the same in the end if well done, and in good grafting the join is soon lost in the growth. There is one advantage in grafting in spring: if it takes, you may have Roses the same year, and thus a season is saved; but, if any of them fail, the stock will grow, if the graft does not; and, of course, if the graft does not grow, you must allow the top branches of the stock to grow, and rub off all other buds, just as if it had not been grafted. The China kinds will graft at any time of the year, but it must be on China



stocks, or stocks partaking of the nature of China stocks. It is only the deciduous kind of stock which is confined to the spring grafting. The French growers are famous for grafting, and it is not uncommon to see the solid stock of a large size cleft to make room for a small bit of choice wood; they holding it to be a waste to throw away the prunings of the Rose, and giving much attention to the profitable use of them. We have seen a French grower, after purchasing a choice tree, cut off all the prunings as close as possible, and put them in his pocket. This, we thought, was sufficiently indicative of which Rose had to be sent to him; but he no sooner got home to his own nursery, than he cut the wood into lengths of two eyes, and actually grafted twenty-five stocks with the wood, and some with two pieces of the wood. His method was to cut down a slit on one side the stock, which he had first cut down rather sloping, with an eye on the upper side of it, making a second cut down, a little angularly, so as to take out a piece like a thick narrow blade of a knife; that is to say, thick at the back, and a sharp edge in front: cutting the lower half of his graft to fit in this place, he bound it there with worsted, and then, having some composition already described, he soaked narrow bits of linen in it, and strapped them neatly round, so as to exclude the air, and the linen, of course, stuck there, as he finished it, by the cooling of the composition. Many of these Roses bloomed in the proper season, and here the advantage over budding was seen; for they had good heads before the buds put in the following Midsummer had fairly started, and this is, in fact, the only object of grafting. It uses up the wood which must be otherwise wasted in many cases; for, although cuttings will strike, they will not flourish at all times, on their own roots, so well as on the more vigorously growing stocks, or, at any rate, they will not for some years; the stocks, for the most part, being well-established, full-grown, vigorous-rooted plants; whereas, the plant on its own root has to be pruned down to it for years before it can be making strong wood.

STANDARDS ON THEIR OWN BOTTOM OR ROOT.

It is very common to see among dwarf or Bush-roses, a strong shoot growing upright, a sucker from the root; and it is frequently the case that these will rise up to five or six feet high. In the Moss-roses this is often to be found. These may always be trained into standard trees, with heads in every way proportioned to the stem. As soon as a vigorous shoot of this kind makes its appearance, cut in the bush at bottom rather hard, as it will tend to strengthen the root, which will be relieved of some of its work by the operation. When the shoot has attained the required height, pinch off the top: this will encourage side shoots, all of which, except the two or three at the top, must be rubbed off. It rarely, however, occurs that any side-growth is made the first season; so that the better way, unless the shoot be getting too long early in the season, is to let it ripen its wood. The latter part of the autumn you may look at the root, to see what state it is in, and how far it may be dependent on the main root. If it be closely joined, so that there would not be sufficient root if separated, the old bush must be sacrificed, and the root secured for the standard. As the upper part of the shoot may not be well ripened, it will be as well to bind a hayband round it, or tie some moss or other litter to save it from sharp frost, though moderate ones will not injure. In the spring, cut the end off as low down as will do for your purpose, and when the buds shoot out it will be seen that the three or four upper ones come first; all others on the stem must be rubbed off; nor is it any great use having two buds on the same side of the tree, if you can manage to have three, or even four within a few inches of the top, pointing different ways, they will form the better head. These may grow as hard as they will, and if they show bloom, pick it off as soon as you can get hold of it, to strengthen the other portion of the tree. Continue to be watchful as to other buds that will continually be pushing from the main stem, and let not one grow but those you have selected for the head. At the end of the year these will have made considerable growth, and, instead of being cut back the next spring to two eyes, as is the practice with many, cut them back only as far as to insure the strength of the remainder, say so as to leave five or six eyes. The next season of growth there will, out of three or four branches, come four or five branches each. Those which come in their places, to help to form a handsome head, may be allowed to grow, but if any come so as to cross others, or where there is plenty of growth already, let them be rubbed off; but it is quite possible for an eye to shoot where it is not wanted, and yet the first or second eye of that shoot may be in a direction to fill up a vacancy where it is necessary: this must, of course, be looked to before buds are rubbed off. These branches, when grown another season, will stretch out the head on all sides to a respectable size, and enable you to thin out the weak wood, and cut back the strong; so that, instead of having the head pimping and small, it may bear a proportion to the stem; for, as we have said before, the head ought to be as wide across as the stem is long from the ground, to the under part of the head. There is one thing to be observed with regard to Standards on their own bottom, they never break off, nor decay, nor canker, half so much as budded and grafted ones.



THE ROOT-GRAFTING OF THE ROSE.

It will be always found in a plantation of Roses that suckers spring up in abundance from the roots; these would soon rob the head or worked part of great portion of its nourishment; but these suckers are useful when taken off with a good portion of root to them, because there is not a more certain mode of propagating the Rose than neatly grafting a piece of the wood of a Rose on the root just under the surface; the union is almost certain, if at all dexterously done. The proper mode of doing this is to pull up the sucker, which will expose the root some distance, and take off a good piece of root with it from the parent stock; cut the sucker completely off to the part that was on the surface of the ground; get a piece of the wood of a Rose as nearly the size of the root as possible, cut a slit in the root, making both cuts smooth and flat inside; then cut the scion wedge fashion, and make the bark fit even with the outer cuticle of the root; tie them well together, and plant them so that the entire graft goes under the surface of the ground. These root grafts are excellent for dwarf plants, for they are worked actually under ground, and when well done will make excellent plants. Grafting the Rose is not chosen before budding; but, as there is always a good deal of waste wood in a Rose-tree that has to come off in spring, many give grafting a chance; and of grafting, root-grafting is one of the most effective. There is never any scarcity of roots among a collection of Roses; forking the ground a little brings up these straggling shoots; and so that there be a good piece of healthy stuff, there is no difficulty in making a good job. There is no occasion to clay over the join in root-grafting. There is another advantage in root-grafting: it is applicable with the China kinds all the season through, if you make sure of a healthy root; nor is there any difficulty in obtaining proper roots for the purpose. Wherever a sucker comes up through the ground, use a fork and take up as much root as you think such a plant ought to have; the operation must be performed quickly, and with a very sharp knife, for the root must not dry under the operation, and they must be planted directly. The graft need not be put in in wedge fashion: any other way is as good, if the join be smooth, well fitted, and tied firmly; but we do not recommend grafting of any kind as the best means of propagation. Nothing is so simple as budding, and scarcely anything so efficacious. The propagators of Roses by root-grafting are very apt to grow the suckers in pots for a considerable time, so that they get completely established after being broken away from the parent root, before they are submitted to the operation of grafting, and this becomes then almost a matter of certainty; whereas we have known the roots of suckers bleed so much, that we have lost the root, and been indebted to the graft striking root for not losing it altogether.

PROPAGATION BY SUCKERS.

Many Roses, indeed most of them growing on their own roots, instead of by grafting on a stock, constantly spread at the roots, and branches force their way up, much to the annoyance sometimes of the men in charge of the Rosery. In the spring months these suckers should be looked for, and when found, they should be taken off at once, far enough under ground to get a piece of root with them. These should be, instantly on the removal, replanted; but if a piece be planted out, and devoted to propagation, the proper method is to dig up the plants in autumn, tracing the roots as far as they go, and taking the portions which have been growing above ground out at the same time. Some kinds will have half-a-dozen, or more, perfect plants, which have been formed by the spreading at the root, and the end growing up through the surface. These suckers should be trimmed and planted carefully, at such distance as the sizes warrant; generally in rows a yard apart, and the plants eighteen inches from each other. Here they have in spring to be cut down to within three or four eyes of the ground.

PROPAGATION BY LAYERS.

The Rose will propagate from layers. To do this some merely select a lower branch, and bending the wood sharp between two joints, peg that down under ground in autumn; it will root well by the following autumn. Others cut a notch in the wood on the upper side, which makes the bend sharper; but there is more danger of breaking it. Another method is to run a knife through the wood, so as to split it, and then give the wood a little twist: but most of the sorts will root if only pegged under the surface. That, however, is rarely resorted to; and when it is considered what facilities for propagation are offered other ways, it is no wonder. The laying should be done as soon as the wood has ripened, and the pegs to be used should be like a miniature hooked walking-stick, which it is easy to form out of any branch of wood. This hook is thrust into the ground firmly, to hold fast the whole winter and summer season. In the dry weather the layers should be watered, as the trees themselves, or bushes, frequently prevent the rain from coming near the surface, where the branch is pegged down, and they would, in such case, have no encouragement to root. In the autumn of the next year, examine them all before they are cut off from the present root, and if rooted, of which there will be little doubt, cut the new plant away with all the new root; and in planting it out in another place, shorten the portion above ground to half its length; and at pruning time in the spring, cut it down within three or four eyes of the ground, that it may form a bush. Layers of some Roses strike almost immediately; and from this facility it is a common practice to lay Roses all over a bed by pegging down the branches on the surface, at small distances, and thus cover a whole space with Roses, which have rooted at almost every joint. The flowers in such case are very strong; but a bush thus treated, and every branch layered, would cut up into an immense number of plants.

MANAGEMENT OF THE ROSE GARDEN EACH MONTH IN THE YEAR.

January.—Look well to all Standard-roses, to see that their stakes are firmly in the ground, and the stocks or trunks well fastened to them. If the heads of Standards are, as they frequently, indeed, are, very large, compared with the hold they have upon the stock, it is necessary that the stock to which the tree is fastened should reach partly through the head, and be fastened to the head itself. It is also desirable, when very large growth has been made, to shorten, though not properly prune, all the longest branches, to lessen the head, that the wind may not have too much power. If you have not provided yourself with stocks before this month, lose no time, and when procured, prune the roots into moderate form, for they will frequently be found straggling and awkward. Besides planting out a number in rows, to be worked in the open ground, pot some of the most compact-rooted in pots, and plunge them, making a post-and-rail sort of frame along them to fasten the stocks to, and prevent them from being disturbed by the wind; also, if you have not got in all the Roses you want, order them and plant them.

February.—Look over the established stocks, and see which are most favourable for grafting; and if you have any wood of Roses you intend to graft, leave it on the trees; but if you have to obtain wood, seek for it in time, and if you get it, plant the thickest end downwards in the ground, in some shady place, because they ought not to be grafted till next month, and the cuttings will keep some time. The China-roses in the house, and Roses in the forcing-house, must be kept well syringed, and watched carefully, that, in the event of green-fly attacking them, they may be fumigated, as well as syringed. Roses in pots should be kept a little moist, and if not pruned in autumn, should be pruned directly. Look to a supply of wild stocks, if you have not yet completed your arrangements.

March.—Prune all Roses which were left half done in the autumn, or not done at all, especially grafted and budded ones of last year, as they have this year to make some growth. Stocks may still do if the season is backward, but not a day must be lost. Look over all the standard trees, examine the pushing buds, trim out all weak shoots from the buds, and cut away all shoots from the stock. This must be always considered of first consequence, for the growth of a branch from a Stock will completely check the growth of the head. All grafted and budded trees, when once fairly growing, should be deprived of all means of growth from the Stock itself. It is not wise to destroy altogether the growth of the Stock above the graft or bud, until the union and subsequent growth of the graft or bud itself are well established; but this once accomplished, leave no vestige of growth belonging to the Stock, and constantly rub off every bud. You may begin grafting this month.

April.—If any suckers appear among established Roses or Stocks, worked or unworked, remove the earth down to where they join the root, and cut them off close. If the Rose quarter is at all infested with snails or slugs, use all means to destroy them. Inverted flower pots, tilted on one side, will catch many snails; cabbage leaves laid on the ground, and examined daily, will entrap slugs. All Stocks on which grafts or buds failed last season must be looked upon as new Stocks, and cut down to where they appear alive. The shoots upon which buds were placed should be cut off close, as well as all side-growths, if they are intended for budding; but if for grafting, the side-shoots may be strong enough to graft on; for, if grafts, and the shoot grafted on, be nearly alike, the graft may be all the safer, and the place of union more completely healed than when small grafts are placed in large Stocks. This month is a good one for grafting, though the operation may be performed successfully in March. Cut back to two eyes all that have been left unpruned, by which late pruning back, the blooming will be protracted considerably.

May.—This is an important month with the Rose. First and foremost, the vigilance in looking for the breaking buds of Stocks, which would rob the head of its growth, must be doubled, and every three or four days they must be examined and rubbed off. Suckers must also be grubbed up the instant they appear. The shoots of the buds of last year will make rapid growth, and require to be screened, that the wind may not break them out or damage them; and it is a very good plan to tie a stick to the stem, to reach a foot above it, and this does well to support any of the shoots. But when a bud throws up a very strong shoot, it is well to take the top off as soon as there are two pair of leaves, for it will make the shoot form a head the first season; but, in any case, the shoots must be supported by a loose tie to the stick above mentioned.

June.—This treatment may be continued throughout the month; and in all the summer, or growing months, great diligence must be used to prevent the Stocks from growing from their own wood, instead of throwing all their strength into the grafts and buds. It is time also to be looking out for sorts you intend to bud with, either by buying the plants outright, or bespeaking buds for the season; and if any come in your way about the end of the month, do not be afraid of budding on the strongest wood you can find of the present season's growth among the Stocks, though you may properly choose a later season if you have nothing to hurry you.

July.—If this month of the season be at all forward, you may bud; and if you have wood given to you when you are not ready for it, put the ends in wet sand, in the shade, and a hand glass over them; but the sooner you can use the buds after you have got them the better. The Stocks must be cut in completely all over, except one or two eyes beyond the bud on the branches in which the bud is inserted. All China-roses in pots or out-of-doors, may be budded, and so also may all the smooth-barked kinds.

August.—Continue the budding, and using every precaution to prevent the Stock from growing, and to remove suckers the instant they appear above ground. Nothing should be allowed to grow, except, just beyond the bud, a shoot may be beneficial, as it draws the sap past the bud; but as soon as it is united and doing well, anything growing beyond it may be broken off, or bent down, to check it a little. Cuttings of the smooth-barked kind will strike almost every month in the year; but at the end of this month, whatever you may be anxious to propagate may be struck in the shade, under a hand-glass, or even quicker where there is a little bottom-heat.

September.—You may now examine the budded plants, and undo the ties of any that appear to swell, tying them more loosely, although tight enough to hold in the bud. If any of the buds have failed, you may open a fresh place, and insert others; but if well done, this will seldom be the case. Continue to remove any shoots or eyes that are showing growth in the stock, for on this much depends. Cuttings from the smooth-wooded kinds may be taken and struck, and any that are struck may be potted off in small pots.

October.—Towards the end of the month look out for healthy stocks, or get some one in that way of business to collect for you. Always choose, and make any who undertake to supply you understand that you require strong stems, perfectly straight, with compact roots, that have not been much damaged by removal. Any that you get should be at once trimmed and planted in rows, about eighteen inches apart, and the rows wide enough to enable you to go up and down them well, to operate in the way of grafting and budding when required. Many of the budded stocks may now be untied altogether, but it is not well to cut the branches in which they are budded close down to the bud until the spring months. As they would be more susceptible of damage by frost, let them all be properly sheltered, and fastened, if they have become loosened. Shorten the longest branches of Standard-roses, that they may not hold the wind so much; and although it would be improper to prune, their close back branches may be cut clean away, because they are of no use on the tree. Cuttings of the China and smooth-wooded kinds may be taken now for general propagation. The plants will be the better for losing the wood, especially all the dwarfs in pots.

November.—This is the best month in the year, if the weather is dry and open, for planting out the garden sorts of Rose trees and bushes; therefore, all removals should be performed as soon as convenient, according to the plan pointed out in the foregoing treatise. The leaves of all the garden sorts are falling, or have fallen. Some of the perpetuals, and the China and hybrid kinds, are, in mild autumns, still growing, and perhaps blooming. Such must not be touched till the leaves have turned yellow, or have dropped; but, in all other cases, where the leaves have faded, the removal is safely and beneficially done. Stocks may be procured and planted, and if the permanent planting cannot, for any particular reasons, be done now, they must be temporally planted or laid in the earth, in a sloping direction, and the roots well covered with mould, which must also be well shook in among the roots and fibres. Cuttings may still be made of the smooth-wood kinds, and placed close together in pots of mould, with half-an-inch thickness of sand at the top. These pots must not be allowed to dry, but they may be put in a pit or greenhouse, or plunged under a hand-glass in the border, if you can answer for covering them well from frost.

December.—Planting goes on well this month, if the weather be dry and open, but if wet, and the ground does not work well, it is better deferred; for if planting is done when the soil will not crumble well, and go between the roots, they cannot succeed. Look well to last month's directions, and attend to them in all respects, if not done before.

SEEDLING ROSES.

SAVING THE SEED.

There is scarcely any one takes sufficient pains in saving the seed of any flower, and the consequence is the very great disappointment which is experienced in the flowering of a lot of seedlings. We are anxious to direct attention to this point in Roses, because hitherto there has been very little care taken as to the quality of those called new; and if these were only something different from other varieties, no matter whether worse or better, it was sufficient to justify the raisers, in their own minds, in selecting it, naming it, and sending it out. It would be needless to inform the growers of collections that scarcely one in five is really worth the room it occupies, seeing how much better it could be occupied by growing more of the approved kinds, and less variety. We have seen, much to our mortification, a hundred Roses sent out by a popular grower, and very few of the number that should ever have been named at all. It is not merely necessary that a person should save seed from the best flowers only, but the best flowers should be by themselves, or at least far removed from those flimsy kinds, which, (as too many are,) cannot even retain the proper form of the flower. Of the fifty and hundred collections shown in bunches, how difficult to pick out a dozen really well-formed Roses; and if this be the case where a man has selected his best, what must be the character of the rest of his stock? We may be answered that the season has been bad, or the time of year bad; but this would only be an answer as to particular shows, and not to all. However, as we are to remedy this evil, as well as to notice it, we will at once proceed to direct what Roses should be selected to seed from. Our advice is to attend to the properties, and, according to your wants, so group your Roses. Take those with the thickest and smoothest petals, so that, if there be any stamens at all, they will assist to seed others, or seed themselves. This will be going the right way to work, and contrary to most of those who have professed to save seed; they have for the most part been content to gather the berries from such trees as bore them, paying little attention to what they were; and it is not to be overlooked that the semi-double varieties bear seeds in great numbers, whereas the better Roses rarely bear them at all, and at all events in very small proportion to the less valuable kinds. This gives rise to the thousand bad ones, with scarcely half-a-dozen good ones, that raisers find on looking at the seed beds. As at first, in this present year even, people will be glad to save seed, and there is no opportunity of grouping a few on purpose, the best plan we can recommend, is to mark the kinds as they flower that are really good full flowers, with thick smooth-edged petals and fine texture, and sow no seed but from them; or we may go further, and recommend that some one semi-double flower, with a fine petal, be selected, and artificially impregnated with the farina or pollen (which is the yellow dust on the stamens) of some good double Rose, or, *vice versâ*, some good double thick-petalled Rose, on which the pistil can be well seen, may be impregnated with the pollen from some other good one which has plenty of it; and the seed, if perfected, may afford some chance of a few good flowers. The marking, however, of all good varieties while in bloom, may enable you to gather a few of the hips from them, and thus secure by both means together a few seeds worth the trouble of sowing. The usual plan of raisers has been to bury these berries or hips in mould, to rot them. We have seen a much quicker mode adopted, and with advantage,—first, the berries have been carefully dried, and then as carefully bruised, and the seeds rubbed out, for the time the berries take to rot would be lost altogether; nevertheless, many persist in burying them from the time they are gathered until the spring, and then rub them out. We need hardly say, that if people had patience, the seed is as good when picked out from the ripe berry or pip as at any time; and we have seen more than once the entire of a batch of seed spoiled by the act of burying it, and therefore prefer, upon the whole, drying them in a greenhouse all the winter, and examining them to see they do not get mouldy; and then, when the season for sowing comes, break or bruise them so as to disengage the seed, which should be cleaned in cloths, and if necessary moistened for that purpose.

SOWING OF THE SEED.

Among the numerous modes of sowing the seed of the Rose, strange as it may seem, the very plan which has been adopted for fifty perennials, or perhaps more, answered as completely as any. For instance, polyanthus seed and rose seed were sown in the same kind of soil, loam and dung, in the same sort of pan, placed in the same garden light, watered at the same time; and, though coming up at a different period, submitted to the same treatment in other respects; shaded from the same noonday sun, and, though at a different time, pricked out into pots, four or five in a pot, round the edge; kept cool and growing right on; and when the polyanthuses were placed in their single pots, the roses were also potted in theirs. They were kept dry rather than otherwise all the ensuing winter, in a cold frame, with their neighbours, well-protected against frost; and that was all. In the spring, when they began to grow, they were bedded out in rows, in a shady border, six inches apart, and the rows a foot apart, and here they remained another season, making considerable growth; some were of the China kind, and those were potted up and kept growing; the others were hooped over with low hoops, which kept the covering close down on them in bad weather, and there were several that died during the winter. In the spring they were pruned carefully, so far as to remove all but the two or three strongest shoots, and these were cut about half-way back. Several bloomed weakly, but most of them made good growth. No part of the success, however, went beyond the growth; not half-a-dozen came at all double, and though there were some bright colours, there were none in our estimation worth saving. The China ones were rather better, but not good enough; so that, after giving a few of the best another year's chance, every vestige was given or thrown away. The experiments followed up season after season, led to the following confirmed practice:—The berries were dried all the winter; they were then bruised in a bag, and the seeds carefully picked out; a slight hot bed was made up as if for annuals; the soil put six inches deep all over, half-rotted turf and half cow-dung, raked smooth, and the seed sown evenly and thinly all over—occasionally moistened; the seeds came up well, and were shaded; had plenty of air given, and the usual attendance to see that they were not dry, but not much watered. Here, as soon as they were large enough, they were thinned a little, by carefully removing a few wherever they were too thick; which removed ones were as carefully potted off and kept in the greenhouse. They had no other care during the season, than protecting them from too much sun; but they were allowed to be quite open on mild cloudy days, and had warm showers of rain at all opportunities. Here it was found necessary to fumigate them several times to get rid of the aphides, which partially appeared five or six times during the season, but were speedily cleared away. The lights were taken off towards the autumn, and the young plants looked as well as could be wished. At the period when frosts were expected, they were removed carefully with all their roots, into a bed made of the same compost, and a foot deep; planted a foot apart every way, and the bed being four feet wide, took four across it, the outer ones being six inches from the edge of the bed. The same precaution was taken with mats and hoops to keep off heavy falls of snow or hard frosts, and they were allowed to push as much as they would, without pruning, all the next season, no other pains being taken than to throw the mat over when the sun was distressingly hot, and to water them freely on dry parching weather, every night. At the autumn they were replanted, all the weak shoots being cut out, but the strong ones not shortened till the spring. Though there was a manifest improvement in the flowers each season, it was four or five before anything like the quality of some present Roses was

Queen of Bourbons.

approached. This practice differs, in some respects, from that of some other nurserymen: we have seen healthy seedlings, since all these pains were taken, where the seeds were sown out of doors in a common bed, raked in like so many onions; came up like so many weeds; grew well and stood the weather without even a shelter from hard frosts. Some may have been killed and not missed, but they did as well, to all appearance, as those more tenderly nursed. Mr. Rivers's plan is as follows:—

"The heps of all the varieties of Roses will, in general, be fully ripe by the beginning of November; they should then be gathered and kept entire, in a flower-pot filled with dry sand, carefully guarded from mice; in February, or by the first week in March, they must be broken to pieces with the fingers, and sown in flower-pots, such as are generally used for sowing seeds in, called 'seed-pans,' but for Rose-seeds they should not be too shallow; nine inches in depth will be enough; these should be nearly but not quite filled with a rich compost of rotten manure and sandy loam or peat; the seeds may be covered, to the depth of about half an inch, with the same compost; a piece of kiln wire must then be placed over the pot, fitting closely at the rim, so as to prevent the ingress of mice, which are passionately fond of Rose-seeds; there must be space enough between the wire and the mould for the young plants to come up, half an inch will probably be found enough; the pots of seed must never be placed under glass, but kept constantly in the open air, in a full sunny exposure, as the wire will shade the mould and prevent its drying. Water should be given occasionally in dry weather; the young plants will, perhaps, make their appearance in April or May, but very often the seed does not vegetate till the second spring. When they have made their "rough leaves," that is, when they have three or four leaves, exclusive of their seed leaves, they must be carefully raised with the point of a narrow pruning knife, potted into small pots, and placed in the shade; if the weather is very hot and dry, they may be covered with a hand-glass for a few days. They may remain in those pots a month, and then be planted out into a rich border; by the end of August, those that are robust growers will have made shoots long enough for budding. Those that have done so may be cut down, and one or two strong stocks budded with each; these will, the following summer, make vigorous shoots, and the summer following, if left unpruned, to a certainty they will produce flowers. This is the only method to ensure seedling Roses flowering the third year; many will do so that are not worked, but very often the superior varieties are shy bloomers on their own roots, till age and careful culture give them strength.

HASTENING THE BLOOMING OF SEEDLINGS.

When the seedlings come up in May, keep them well moistened, but not too wet, until you can get hold of them well to pot off. Put one each into sixty-sized pots, and let them, as soon as they are established, be placed in the shade out of doors; but the greatest care must be taken to prevent the attack of the fly, or vermin of any kind. They must be looked at almost daily, and upon the least appearance of fly you must remove the plants under cover, where you can fumigate and syringe them regularly. It is still better, if you have frame room, to put them in when potted, because it gives an opportunity of shading, of keeping off too much wet, protecting them against wind, and of fumigating without the least difficulty, when necessary. They should, however, seldom have the glasses on. After they have been five or six weeks in these pots, they may be bedded out, in rich beds of loam and dung, without disturbing the balls; they should be about a foot apart, in beds of four feet wide; by planting within six inches of the side of the bed, four rows will go in, and they will here grow rapidly. Before the close of the budding season, many will have grown quite large enough to bud from; and the most promising may be cut back, and three or four buds put on remarkably strong stocks. Select a strong branch for budding on, and at first you must let some portion of the branch beyond the bud be left on to grow; a very small shoot beyond the bud will do to draw the sap past the bud. These buds will strike off vigorously the next season, and make considerable growth; but before the bud has shot far, cut the stock away everywhere but the portions budded on. The growth they will make this summer on strong stocks will insure their bloom the next season; and, as the real object is to see if the Rose be good for anything, they should not be pruned, except so far as to cut away weak branches altogether; by leaving the full length of the strong shoots, the blooms will be hastened. In the meantime, those in the bed may be treated as directed; and though not generally the case under present management, we have bloomed them these three years on their own bottoms, though there were a great number much later than the third year, and some even went to the fifth. This mode of budding the promising seedlings, hastens the certainty of bloom very much, as it is very rare indeed that they miss coming the third year. If they are worth propagating, the budding greatly increases the quantity of wood to work from. If, on the contrary, they turn out good for nothing, the instant you discover it, cut away all the wood, and the stocks will, in all probability, grow in time for budding other sorts upon the same season you discover the deficiency of these already worked. In this way, without incurring much trouble, you may satisfy yourself as to the quality of seedlings for a certainty the third year; therefore you should provide yourself with stocks for that purpose, whenever you sow seedlings. For China sorts, you should have some strong stocks of the common China, or Boursault, or the Dog-rose, in good-sized pots, and well-established; for they may be budded later, protected better, and indeed some of the seedlings which partake much of the Chinas, are tender, and really require protection from the frosts. The summary of this seed-growing business, for the production of new Roses, then, is something like the following:—

CALENDAR OF OPERATIONS FOR SEEDLINGS.

March.—Sow the seeds in large pots or deep pans, and keep them from once getting dry, or being frosted.

April.—Keep them moist; and in a very dry season, which sometimes occurs, lay some wet moss lightly at the top; but, at any rate, see they do not get dry. Shade them from the hot sun.

May.—The young plants will be up, and require great care to keep them from damaging from too much wet, or burning up for want of moisture.

June.—The plants will have advanced enough to pot off, one in a pot, size sixty, with loam, peat, and decomposed dung, and they must be placed in the shade out of doors, or in a frame and light, to grow five or six weeks. See to watering them when required, and on any appearance of green fly, fumigate them with tobacco.

July.—Plant them out in beds, four feet wide, of the same soil, without disturbing the balls of earth: let them be six inches from the side, and a foot apart all over. Protect from vermin by all the ordinary means. Shade them from the heat of the sun at mid-day. Water occasionally.

August.—Bud any of the sorts of which the wood is sufficiently strong, and the plant sufficiently promising, on strong, healthy stocks, in the ordinary way; and lay a little loose moss over the bud, to be kept damp, the first few days.

September.—Others may be budded on the China and Boursault stocks in pots, but you should select such as promise to be of the China, or smooth-wooded kind. See that the stocks of the August-budded, do not shoot. Weed those in beds.

October.—Examine the August-budded, to loosen the ties, if necessary. Break off, or cut off, the wild part above the bud, all but one growing eye, to keep up the circulation; remove all other shoots and branches; cut up all suckers; gather the berries or hips of any desirable Roses, if ripe. Look to those budded on stocks in pots.

November. — Continue this treatment. Throw light litter, such as peashaulm, over the Roses in beds of a night, and when it is frost, do not remove it during the day; continue gathering ripe berries or hips; cut out the weak shoots from all the seedlings, keeping only the robust and strong ones on the plant, except such as you want for buds.

December.—Put a tile at the bottom of a flower-pot, and put the hips that are perfectly ripe in, covering them three or four inches in sand, to keep them till wanted; or lay them out thinly on a dry shelf, to dry out the moisture: the latter is the best in our opinion. See that the stocks which are budded are secured to stakes against the effects of the wind. Protect the smooth-wooded kinds, budded on the stocks, in pots from the frost, and look well to the litter on those in beds.

January.—Continue the December treatment throughout this month; and as the smooth-wooded sorts, budded in pots, will be growing, support these shoots; and remove all other eyes from the stocks, the instant they break.

February.—Bruise the berries, and rub out the seed ready for sowing next month; continuing the same treatment in other respects.

SECOND YEAR.

March.—Sow other seed as before. Examine all the buds of the last year. Clear away suckers and buds of the stocks, where they incline to grow. See that they are all fastened to the stakes, to save them from the wind.

April.—Treat the seed as last year. Weed the Roses in beds. Bud any of the smooth-wooded kinds that are strong enough, in China or Boursault stocks, growing in pots. Shorten some of the strongest wood, and if any of the weak are left on, remove them. Be vigilant among the stocks of last year's budding, to prevent them from growing, and checking the buds.

May.—Attend as last year upon the seedlings in pots; as the buds of last year's inserting push, protect them from the wind, by gently fastening them to a stick bound on the stock for that purpose, as when a shoot is strong and not protected, the wind has sometimes power to blow the bud quite out of its place.

June.—Look to the seedlings in the pans; they require potting off. The bed may be weeded, and the earth stirred between the Roses. The watering must be attended to; they should be syringed also with a fine rose on the syringe, but with some force, to prevent the green fly locating. The stocks now may be cleared of every shoot by breaking them off as fast as they make their appearance; and the removal of suckers is necessary.

July.—Plant out this year's seedlings, and see that last year's do not want for water. Weed them when required. Attend to the budded ones as last month.

August.—Bud everything that looks likely to produce a good flower, or indicates novelty, taking the strongest eyes you can find for the purpose; and do not lose sight of any of the shoots from buds of last year, that they may be tied, to prevent their breaking out: some which grow fast would be torn out by their own weight, if this were not attended to.

September.—Continue budding likely sorts as last year; weeding, watering, &c., and watching the progress of those budded last season.

October.—Same as last year to young seedlings; the others have pretty well made all their growth. As none but the strong shoots are useful, cut out all the thin useless little branches, and fasten the others for the winter so that the wind cannot affect them. Gather berries as last year.

November.—Attend to the litter on the young seedlings; those of the first sowing will be strong enough to do without it, except in very severe weather indeed. Prune the first year's seedlings, by cutting out the small brushwood sort of shoots, leaving none but the strong. Continue gathering berries.

December.—Preserve the hips or berries as before, and look to last year's practice altogether.

January.—As before in all respects; the stocks budded first have got strong growth upon them, and require no care.

February.—Look to last year for directions. The third season of sowing, which begins in March, goes on like the two predecessors. All we have to do now is, to watch for the opening blooms on the budded sorts, which are not to be pruned except as mentioned, by removing the weaker, and leaving none but the strongest shoots, which are not even to be shortened. This practice would have been just as well in one year as two; but as young growers of any thing are apt to get confused, we have rather wasted a few words, than leave a thing doubtful or intricate. Many persons have lost fine opportunities of raising seedling Roses, yet no flower wants improving more: no subject will repay the raiser of a good variety better than the Rose, nor is there in any flower more room for fine varieties.

GENERAL HINTS.

We may mention, as a general characteristic, that there is no plant which yields more willingly to culture than the Rose, nor in the growth of which there is so much certainty. If you desire a large quantity of bloom, and are not so anxious about the size of the flowers, there is nothing required but to spare the knife; take out weak shoots, but leave plenty of wood on the tree, for every eye will bloom, and the more you leave on the better for that purpose. In this case the new wood made is but short, because there is so much of it. If, on the contrary, you desire large blooms, cut away all the strong wood, of the year previous, down to two eyes at the most, and cut all the weak wood out altogether. Indeed you may go further; for you may cut away half the strong shoots, and lessen the number of eyes still more. Again, Roses in poor soil will grow and bloom; their flowers will be smaller, but not less healthy; their wood will be weaker and shorter, but still sound. The principal danger when a Rose is starved is, that it may come less double; and this is so serious a fault, that it has occasioned many to be thrown away that did not deserve it, and caused many others to be considered wrong varieties, when they wanted nothing but good growth to make them right ones. On the other hand, rich soils will cause a Rose to grow enormously; and all intermediate growths between the strongest and the weakest may be secured according to the soil they are put in to grow. Generally, people fancy that dung is the only thing required; this is a mistake, loam is required to grow the Rose in perfection; and if ground is poor and light, a spadeful of loam and a spadeful of dung, will be far better than two spadefuls of dung. This ought to be always mixed with the soil a little, and the Rose planted in it. Roses are sadly injured by the wind, and the blooms require fastening to something or other, to prevent their being frayed. The stakes of Roses should always be made fast to the Rose, or the Roses be made fast to the stakes, with the patent leaden wire, or copper wire; because bast matting, or other perishable stuff, will give way when high wind takes them, and they receive a good deal of mischief before they are observed and fastened again. Of the Roses at present in cultivation, very few which are not semi-double will open out boldly; and those which are semi-double, are not fit to show as single flowers. There are, however, some which will bear the test of stand-showing, and they not of the dearest or newest. Those, therefore, who desire to grow none but perfect flowers, should state to the dealer, of whom they mean to buy, that their object is to have none but such as will expand and show a good face when fully bloomed, as they purpose growing none others. The establishment of the showing in stands, like Dahlias, will cause many old and fine Roses to be appreciated, and a great many new ones to be discarded; for although it is not the gayest mode of exhibiting Roses, it is by far the best mode of testing, and it is curious to see the number of varieties with very glaring faults. For instance, some are close balls of petals, with the outer ones rolling back a little, as if they were shrivelling; but never opening fairly. Others no sooner open than they show their yellow seeds and their paucity of petals; some are on stems too weak to hold them in their position; others again, burst into a broken mass of ill-formed petals, that do not compensate for their sweetness. Some fall to pieces the instant they are open, and others almost before they open; many are shapeless masses of coloured flimsy texture, that neither hold themselves in form nor impart fragrance. It is worth while to direct the attention of the amateur to the large collections of Roses to be seen at exhibitions, and to the very few which are to be found among them of a fine form. They will observe bunches of half-bloomed things, that dare not be shown any forwarder; they will find plenty of hard lumps, on stems not strong enough to bear them without lolloping about; they will find some without a round smooth petal among them, but very few so good as the Tuscan, the Cabbage, the Moss, the Provence, and the oldest of the known good varieties. This shows the necessity of attention to the hints we have thrown out; for we must again confess, that although we have selected the best among eleven or twelve hundred Roses, there are many that we shall see rejected like the remainder of the entire collection, to make way for better flowers and better taste.

As a concluding observation respecting the management of the Rose, we are bound to say, that a good deal that is done now is erroneous, although taught by Rose cultivators; and especially with regard to Roses in pots, which, however pretty they may look, are very much drawn, and very unnaturally supported. That the system, if pursued, will lead to the introduction and toleration of varieties which cannot support themselves, in the same manner as it did to the introduction of worthless Geraniums, there is no room to doubt; for in the specimens exhibited in pots at various shows, the total inability of the flowers and stems to support themselves is manifested, as well as the disposition to encourage this strange mode of distorting things. Some allowance should be made for any forced subject; but that gardener who can produce his plants without supports, is the one who deserves a prize for his skill: not the man who draws a plant till it cannot support itself, and then keeps it up with frame-work. There is much to be done in the choice of Roses, for particular objects:—Those inclined to droop should be on very tall stalks, for their pendulous habit is very handsome, and renders the tree a beautiful drooping object; those for bushes ought to be short jointed and close habited, as best suited to dwarfs, and so also will they be found for dwarf standards, or half standards. Again, in budding several sorts on one stock, they should be chosen of precisely similar habit and growth, and of totally different colours. In this the reader will be easily suited, because whoever he purchases of will advise him well, if he has not seen enough to judge for himself. The Rose does not flourish well near great towns, as London, Manchester, and Liverpool; nevertheless, it can be grown and bloomed after some fashion, so that people should not be deterred from trying them; they must, however, plant them out in the most open situation they have, for they want much air to keep them in health. The general routine for Rose culture is given both as respects the general collection, and also for seedlings; and with attention to what has been here written, we think a mere novice may, with a little enterprise, beat one who grows upon any other system.—RICHELIEU, *Bruxelles*, 1845.

By attending, first to the purchasing, next, by turns, to the planting, pruning, and blooming, according to the plans here laid down, (a system of management for the Rose garden, much plainer and more simple, much better understood and easier to practise, than any we have seen before, and yet comprising every hint worth having from those who have written upon the subject,) we have no doubt that every reader will be amply repaid for his trouble, and care and attention, and be gratified by the success which cannot fail to crown his efforts.—ED.

REMARKS ON THE PRESENT CLASSIFICATION OF ROSES.

THE PROVENCE ROSE.

THE Provence-rose, or, as it has been called, the Hundred-leaved-rose, is a distinguishing title for every Rose that has a remarkably double flower, unless there is something in the habit or character, that causes for it another title. If this were understood, we should know what we were about. The Moss-rose would clearly come under this, were it not for the moss; for the old Cabbage-rose, and the Moss-rose strongly grown, would not be known from each other, except for the moss: but the moss is a distinction, and a Moss-rose would be a Moss-rose, if ever so single, though its original were double and fine. Now, the Provences, of which the old Cabbage-rose is a sort of type, and generally called the Hundred-leaved-rose, ceases to deserve this if semi-double. So that, although the origin of the family is rightly named, many pushed into the same list do not deserve the name.

MOSS-ROSE.

This family is distinguished by the mossy appearance of their stems and the calyx, and therefore there is no difficulty in recognising any member of the family.

THE FRENCH ROSE.

This, to some of our readers, would appear to mean Roses raised in France. It happens, however, that the original was, as many of the leading ones were, raised by Van Eden, in Holland, and it was years before the French raised a single seedling from them: nevertheless some of the so-called varieties were raised in France, but as there are hundreds raised in France, which are not belonging to this family, the distinguishing name fails; and were it not so, they are so unlike each other, that we could not recognise, in any particular feature, enough to decide, nor do the Rose-growers themselves appear more certain.

HYBRID PROVENCE-ROSES.

These are said to be intermediate between French and Provence-roses, because they have the long shoots of the one, and the dense foliage of the other; the said long shoots and dense foliage being the characteristics of Roses of other families in quite as large a degree; and even in this very family, we have varieties which, the same authority says, seem to be between the Boursault and Provence. Then, to show how utterly unlike some other members of this family are, we have the white Glove-hip, which was raised at Hammersmith, and once a favourite, because novel white, but of no merit as to form; and Volupte, "a bright vivid rose-colour and perfect shape—all that can be wished for in a rose." And a great, sprawling, loose, flimsy Rose called the Tree-peony-rose, which Mr. Rivers truly says cannot long be a favourite; and in a note he subsequently tells us, he has now placed it amongst the Damask. So that all is indecision, change, uncertainty, and frivolity. In this family the distinguishing character is that they "are robust and hardy:" so are hundreds that do not belong to this family.

HYBRID CHINA-ROSES.

We are told of this family, that the numerous varieties give a combination of all that is beautiful in a Rose. They are said to owe their origin to all sorts of crosses: but there is a distinguishing feature in these if it be adhered to—"Leaves smooth, glossy, and sub-evergreen; branches long, luxuriant, and flexible." Then, again, we are informed, "that hybrids produced from the rose, impregnated with the China-rose, are not of such robust and vigorous habits, as when the China-rose is the female parent." This looks like plain straightforward information; but it is followed by the same incertitude, as some of the other distinguishing features of families. Mr. Rivers adds, "But, perhaps, this is an opinion not borne out by facts; for the exceptions are numerous, and, like many other variations in Roses, and plants in general, *seems to bid defiance to systematic rules.*" Of course they do; and, with the exception of those names which bespeak a distinct character, the splitting of this beautiful flower into so many different families at all, was a very injudicious measure. Athelin, a rose classed in this group, is called also a hybrid Bourbon, and as it blooms in clusters, would have been much better understood if called a Noisette. It comprises other Roses as unlike each other as can well be imagined, and many of them will shoot ten feet in a season, and would be much more at home if classed as Climbing-roses. Belle de Rosny, among this family, is nevertheless called also a hybrid Noisette. Châtelaine is also called a hybrid Bourbon, and many others of this family are destined to be removed, if the senseless distinctions by name are to be kept up.

ROSA ALBA, OR THE WHITE-ROSE.

Here we have an illustration of the extreme folly of the present distinctions. We are told, the Roses of this division may be easily distinguished by their green shoots, and leaves of a glaucous green, looking as if they were covered with a greyish impalpable powder; and flowers generally of the most delicate colours, graduating from pure white to a bright but delicate pink. So much for the family of the White-rose.

THE DAMASK-ROSE.

This is as incongruous a group as any. Blanche-borde-de-rouge has flowers sometimes a pure white, at others margined with red. Claudine has flowers of a pale rose-colour. York and Lancaster, also classed among them, has flowers striped with red and white. Coralie is flesh colour. Then we have Madame Hardy, which, we are fairly told, "is not a pure Damask-rose;" perhaps not, as it is a white, and unlike all the rest. Then, there is the Duke of Cambridge, which Mr. Rivers "at first thought a hybrid China," and says, "will, perhaps, be better grouped with the Damask-roses." Why, these ridiculous contradictions, and the contrasts in habit, colour, and character, condemn the present classification altogether.

SCOTCH ROSES.

So long as they allowed the family to be kept select, these were very distinct: they make long briary shoots, and flower with small blooms almost like briars, the whole length of the stems. They are exceedingly pretty formed as a bank, or in clumps. They are not adapted for standards. They bloom early, and the Scotch nurserymen now boast of two or three hundred varieties; but like all the other families, there are many among them that have been raised from seed, and others imported, but which are neither by name nor nature Scotch. Aimable Etrangère is a French hybrid. Adelaide is a large red double rose. La Cenomane is a French hybrid, with large flowers, "not so robust as the pure Scotch varieties." Why place it there, then? Thus it is that families lose their distinguishing character, by the introduction of varieties which do not belong to them, and, in some cases, where there is no conceivable excuse for it.

THE SWEET BRIAR.

This lovely ornament, or rather tenant of the garden, is universally admired for the delicious fragrance of its foliage, and for nothing else. It is only necessary to say here, that others whose leaves are not fragrant have been placed with it to make a family; some of the new members having but little fragrance, and one, the scarlet Sweet-briar, none at all. Such is the very sensible way in which the Rose business is carried on.

THE AUSTRIAN BRIAR.

Here we have the same evidence of indecision as to where things ought to be placed. In this scentless family we have Williams's double yellow Sweet-briar. In fact, the Sweet-briar and the Austrian-briar are muddled together so completely that catalogues do not agree, and the further we go the more confusion we get into, and more instances occur of removal from one division to another.

THE DOUBLE YELLOW ROSE.

Here we have only two individuals, the old double Golden Yellow, so beautiful and double as to be universally admired, and the Jaune, a dwarf kind, both shy bloomers under ordinary management, or, when we come to the rights of it, never blooming well till they are matured, which takes some years. Of course, there are many double Yellow-roses, but only two are admitted into this select family.

CLIMBING ROSES.

Here we might expect to find all those Roses which, from their habits, were adapted for the fronts of houses, poles, trellises, and other lofty stations. One would, at least, expect that if Climbing-roses mean anything it means all roses that will climb. No such thing. Having pushed we know not how many Roses that climb into other families, of course they can not be here. We have various divisions in this family notwithstanding: first, we have the Ayrshire-rose, which is said to be a hybrid, accompanied by several others called Ayrshire-roses also; next, we have the second division, called Rosa-multiflora, said to be a native of Japan, and a number of companions as unlike it as may be; not that there are any among this family that do not climb, but that there are very many as good Climbing-roses shut out from it.

THE EVERGREEN ROSE.

Here there can be no mistake: an Evergreen-rose must be an Evergreen-rose; but although we have some enumerated, there are plenty of Evergreen-roses not admitted into this family, but pushed about in all directions, some crammed into the China, and some into the hybrid China.

THE BOURSAULT ROSE.

This is said, by Mr. Rivers, to be "a most distinct group of Roses, with long reddish flexible shoots;" yet Gracilis is affirmed to be "unlike the other varieties of this division." They are said to be Climbing-roses, making ten feet of growth in the season.

THE BANKSIAN ROSE.

The white and yellow Banksian-roses are very beautiful plants, with small foliage and flowers, very graceful, and distinct as any Roses in cultivation: yet we have a rose-coloured hybrid introduced with them; a plant acknowledged to partake "as much of the character of the Boursault-rose, as of the Banksian." This "betwixt and between" work seems very much like child's play. Yet, we are told, these also are all Climbing-roses.

HYBRID CLIMBING-ROSES:

meaning, one would think, Roses that are neither Climbing nor Dwarf, but between both. Not so, however; because Rosa-craculatum makes shoots from ten to fifteen feet in a season. Madame d'Arblay, or Well's white, has been formerly placed among the Evergreen-roses; but whether she misbehaved herself there, or was a great favourite here, is of no consequence. She was removed from that family to this. We are, however, informed with regard to her sojourn among the family of Evergreens, and subsequent removal, that her "habit is so different, and her origin so well ascertained, that Mr. Rivers removed her to the present family." All this shows the absurdity of the present arrangements.

PERPETUAL ROSES.

These, if the Rose gentlemen would stick to the character, would be very easily defined,—Roses which have a complete season of bloom;

which go off but a short time; make a fresh season of bloom, and so on. Not like the China-roses, always "growing and blowing," but fairly making different seasons of bloom, as complete as if a winter intervened. Now, there could be no mistaking this character. The members of this family are numerous, and if two-thirds were banished the English gardens, so much the better.

THE BOURBON ROSE.

The original Bourbon-rose was a hybrid between the common China and the red four-seasons. Of course this was quite enough reason for Rose-growers to add to the family all that were something like it, and others that were nothing like it. Here let Mr. Rivers speak: "Diaphane is a small high-coloured Rose, almost scarlet. This is not a true Bourbon." The fact is, there is nothing like the Bourbon-rose about it. Here we have also Gloire de Rosamène, unlike the Bourbon-rose in everything. It is a robust Climbing-rose, which even Mr. Rivers himself says, "as a Pillar-rose it will form a splendid object." The white Bourbon, which the French cultivators are at war about, "some swearing," as Mr. Rivers tells us, "by all their saints that it is a veritable Bourbon, while others as strongly maintain that it is a Noisette;" and from its clustered flowers the latter are nearest right. But all this arises from the multiplication of families.

THE CHINA ROSE.

Everybody knows the pale China and the dark China-roses, which may be seen decorating the cottages of our industrious classes as well as the gardens of the rich. They were, however, Bengal-roses, and not natives of China. Now the distinguishing characteristic of the Bengal, or, as now called, China-rose, is smooth bark, with the thorns distant from each other; shining leaves, and constant growing and blooming. These features could be well understood by everybody; but every thing that can be at all traced to have any one of these features, and cannot easily be placed in other families, must come to this; and so we have plenty, and a most beautiful family it is.

THE TEA-SCENTED CHINA ROSE

is an acknowledged variation of the Bengal, or, as the Rose-dealers will have it, China-rose; but it is a true China, imported from that empire in 1810. It is said to have been the parent of this large family; but here we have the same difficulty that presents itself in other families—there is no place to draw the line: they are China-roses, and only China-roses, but they are stronger scented than the Bengal, called common China, and it is difficult to detect the difference between the highest perfumed of the former class and the lowest perfumed of the Tea-China, as now classed.

THE MINIATURE ROSE.

This family is also said to be China, possessing all the marked features; but it is smaller than the others, and is acknowledged by Mr. Rivers to be only a dwarf variety of the common China, or, as we insist, Bengal. It is worthy of remark, that all those so called China-roses have the characteristics we have mentioned—the constant growing and blooming if kept in order under proper protection; and are not deciduous.

THE NOISETTE ROSE.

The distinguishing character of this Rose is that it flowers in bunches, and this ought to be the character of every one added to the family. But here we have Lamarque, which is anything but a Noisette; it does not flower in bunches, unless every Rose which has two or three flowers on a stem is to be called Noisette; and Smith's yellow Noisette is about as much entitled to the name as Lamarque. But they are not alone; too many which have no claim on the family have nevertheless been forced on them.

THE MUSK ROSE.

This is an old favourite, and many which have been supposed to come from its seed are fastened on it as a family, and many not very like the parent. The family, like some of the others, is delightfully confused, and there is nothing so distinct as to connect it as a separate class.

THE MACARTNEY ROSE.

The characteristic of this Rose is its very bright thick evergreen foliage, and therefore any other hybrid Roses which have that characteristic, might, according to other classifications, be put among these. Maria Leonida is perhaps the best of them; Rosa berberifolia Hardii, of whose origin Mr. Rivers makes a sad muddle, is classed with this family. Mr. Rivers's story is, that "Rosa Hardii was lately raised from seed by Mons. Hardy of the Luxemburg Gardens from Rosa involucre, a variety of Rosa bracteata, fertilized with that unique rose Rosa berberifolia, or the single yellow Persian Rose." The fact is, that the seed of Rosa berberifolia was very frequently exported from Persia, and comes always true to the parent; some of the Persian seed was sent to Mons. Hardy, and from that, he, like others, raised the true Rosa berberifolia, which Mr. Lee of the Hammersmith Nursery raised from Persian seed likewise, more than twenty years before Mr. Hardy was a Rose raiser at all. Well may Mr. Rivers say, in continuation: "This curious hybrid, like its Persian parent, has single yellow flowers, with a dark eye, and evergreen foliage." The fertilization part of the business is the mere work of a fertile imagination. When any one has got Rosa berberifolia, he need not trouble himself about whether he has it from the seed raised by Mons. Hardy, or the seed raised by his predecessors. There is no more variation, and no more hybrid about either, than there is in two plants of small salad.

ROSA MICROPHYLLA.

This, we are told, is nearly allied to the Macartney-rose; so are the varieties of it, and ought not to have been separated.

PROPOSED CLASSIFICATION.

Upon the whole, the present classification of Roses is perfectly ridiculous in many respects, and the sooner some decided alteration is made the better. The florists have completely destroyed all interest in the species by producing superior garden varieties, and Roses ought now to be classed by their habits, and not by their parentage; nor do we believe there is the least authority for one-half that is said about parentage. The term hybrid, as applied to Roses, is perfectly absurd in itself; there is nothing to justify it, no more indeed than there is to justify the term as applied to a Dahlia, a Tulip, or a Fuchsia. The mere seeding of mixed varieties, whether artificial or impregnated, makes no hybrid, although the botanical world chooses to call it so. The families of Roses should be lessened in number, and varied in extent, and so classed that people should be able to know them. The following classification may be very imperfect, but it may set others improving:—

China and Bengal climbing,
China and Bengal climbing Noisette,
China and Bengal dwarf,
China and Bengal dwarf Noisette.

These should include the so-called China, Tea-scented, Miniature, and those Noisette Roses which have smooth wood and continuous growth, like the common Bengal and China-roses.

The double garden Climbing-rose,
The double garden Noisette ditto,
The double garden dwarf,
The double garden dwarf Noisette.

These might comprise all the deciduous Roses but the Perpetuals and Moss; whether Rosa Gallica, Centifolia, hybrids so called, or others that bloom in the summer season out of doors.

PERPETUAL ROSES.

These to comprise all those Roses which come out in bloom, and after a short rest start afresh, and bloom all over again, and so continue until the latest autumn. There is no mistake about these Roses, nor can there be any, whether hybrids or not; the character and habit decides the name and family.

Moss-roses climbing,
Moss-roses dwarf,
Moss-roses climbing Noisette,
Moss-roses dwarf Noisette.

This would comprise those with moss on their calyx, separated merely into whatever department they belonged to.

THE BRIARS

would comprise all of that peculiar habit which nobody can mistake, and none others; namely, joints short; flowering all along the stem; perfectly deciduous. The true Scotch Rose might be included, perhaps, in this class, for they are more like briars than anything else.

CLIMBING ROSES NOT BEFORE INCLUDED.

These may be comprised of all the kinds that will not by description and habit come under the foregoing families, some of them distinct in themselves, it is true, and varieties improperly called, though understood as hybrids, not being perhaps sufficiently decided in their characters to be classed.

DWARF ROSES NOT BEFORE INCLUDED.

These would comprise all the dwarf hybrids, and species that will not go under any former distinction; by reason, as it may be, of their intermediate character between China and garden, or evergreen and deciduous kinds.

NOISETTES NOT BEFORE INCLUDED,

if there be any; but these last three classes are literally intended as refuge for the destitute. We see no use in so many distinctions; and least of all, in such distinctions, as few, if any common persons can understand. Now, according to our notions, crude as they are, nobody can mistake; but the idea of an indifferent person knowing or caring about the difference between Rosa-centifolia, Rosa Gallica, and one-half the crosses, which even the rose-growers themselves do not know how to distinguish or class—is not less absurd than unprofitable. Everybody can tell whether a Rose is a climber or not; is deciduous or not; has smooth wood or not; has moss or not; is perpetual or not; and these distinctions, so far as they go, ought to be complied with in modern catalogues,—and the first rose-dealer that will so class them, that all the world may understand them, shall have the pleasure of seeing it printed in this work, if he should so will it. We do not insist upon our mode of classifying them being right; we have no doubt it might be greatly improved, but we do insist upon this: the Catalogues, as now published, containing more than a thousand varieties, have them classed so miserably, that Roses in the same family actually differ more than one family does from another. Let us ask what consequence it is to a grower, whether a Rose he takes was bred from a Moss-rose or a Dog-rose? A French Rose or a Bengal? A Chinese or a British? He wants the Roses classed, so that the class tells their habit and growth, that he may know what he is about when ordering. This classification is absolutely necessary; and when all the flimsy-petalled, ragged, semi-double, loose, weak-stemmed, ill-formed flowers are discarded from the principal families, there will be some pleasure in ordering and growing Roses.—*Bertrand.*

ANECDOTES OF ROSES.

Lee's Crimson Perpetual, or Rose du Roi, was one of the many splendid Roses introduced by Mr. Calvert, the nurseryman of Rouen, who has before now made sales to the Hammersmith Nursery of twelve hundred pounds worth in a single journey. Lelieur, the gardener at St. Cloud, was the raiser, and wished to name the Rose after himself, Lelieur. The then minister of the Maison du Roi, desired to name it Rose du Roi, for the perfection of the Rose was in those days a matter of notoriety. The gardener and the minister were alike obstinate, and the matter was actually referred to Louis XVIII., who decided that the minister was right. Lelieur instantly threw up his situation.

Rosa Gallica, the French Rose. The Rose nurserymen, in France as well as England, are so very cunning, that they have pretended, while dividing these Roses into families, to class them according to their parentage; and after raising Roses like so much small salading from hips, gathered wherever they could be found, they have examined the attributes of these selected seedlings, and fastened them upon whichever they fancied they belonged to. The fine French Roses, so called, have all been derived from the original Tuscany, and others of the early Rosa Gallica, which has just as much right to the name as "Louis-the-Sixteenth" Tulip has to be called a French Tulip. Van Eden and others, of Haerlem, raised all the early varieties in Holland; and the first man in France that succeeded in raising new varieties from them was Descemet, who resided at St. Denis, and began sowing Roses when he left St. Denis for Odessa. Vibert bought all his stock, and continued the raising of seedlings. Rosa Gallica, therefore, is a family of which all the best and earliest were Dutch, from the Old Tuscany downwards.

The Single Yellow Rose.—This Rose, called Rosa berberifolia, is a Persian species, and was at one time the only Rose in many parts of the kingdom. The seeds were frequently introduced, and being saved where there was nothing to interfere with it, they always produced Roses like the parent. More than forty, perhaps more than fifty years ago, Mr. Lee raised some from Persian seed, all of which came true. Twenty or thirty years afterwards, Monsieur Hardy raised some, which also came true; but after the fashion of a cunning florist, he put forth a statement that he had raised this by fertilizing the Persian-rose with some other, and produced a hybrid yellow, which he called Rosa berberifolia Hardii, (he forgot the Persian Rose never seeds here,) which, as very few grew, or even knew the original, went down as something wonderful. Some of the Rose-growers were taken in, because Roses are sent out by description. Rivers, among the rest, actually republished the raiser's ideal fertilization affair, and gives it to his confiding readers as a fact, although he admits it is like the original. The French have realized enormous sums by bits of cunning like this; but those who have seen the original Rosa berberifolia, or who grow it, may safely put Hardii to it. Whether Monsieur Hardy wanted to feed his vanity or his purse, is rather doubtful; but whatever he may say, he raised it from Persian seed, and had no more to do with fertilizing, or even saving it himself, than we had.

The Village Maid.—When this was first introduced to England, the price advertised by Calvert in his catalogues was seven shillings and sixpence; but before the printed catalogues, by which he meant to sell them, were published, he was persuaded to have a sale at the Mart in London. At this sale, the identical plants which he would have disposed of at the before-mentioned price to amateurs, and five shillings to the trade, were greedily snapped up at fifteen, eighteen, twenty shillings, and a guinea; and he sent back to France for another lot.

The Crested Moss.—Various are the tales about the origin of this very beautiful Rose. Mr. Rivers says it was discovered in the crevice of a wall, at Friburg in Switzerland; but it is one of the most distinct of the tribe. When perfectly open, it is to all appearance a superior Provence-rose; but, like all the mosses, the distinctive beauty consists entirely in the calyx, which, until the opening flower throws it back and conceals it, is in every stage beautiful. This is also called Crested Provence, and Rosa cristata.

The Pompone Moss, or Moussue de Meaux, is said to have been *found* by Mr. Sweet of the Bristol Nursery, in a garden at Taunton, and a most beautiful and unique Rose it is. It is further said, Mr. Sweet "obtained possession of the plant for five pounds"—cheap enough too. Of course a thing "found," and of which possession is obtained so cheaply, would be sold cheap. After making as many hundreds as the finder thought would pay, he "distributed young plants at one guinea each." Many curious tales have been told of strange fruit and flowers being discovered in old gardens, and sold as new sorts with new names; but in this Rose there was real novelty and beauty. It is supposed by Mr. Rivers to be an accidental sprout from the old Rose de Meaux, and not from seed; but be this as it may, it is a pretty Rose, and it is almost a wonder a family has not been originated from it. Perhaps the fact of its not having seed has prevented the Rose-growers from saying they have hybridized it, or raised something from it.

The Noisette Rose is said by Mr. Rivers to have been raised from seed by Monsieur Philip Noisette in America, and sent by him to his brother in Paris. Now this does not happen to be true. It was raised by a gentleman in Long Island; a plant was brought from there by Monsieur Landorme, an intimate acquaintance of the raiser, to Rouen, where it was cultivated in large quantities. Paillard, a gardener at Rouen, when Noisette of Paris received a plant from his brother in America, (who, by the by, might object to inform us how he got it from Long Island),—grew it under an iron cage in one of his houses for protection, while it was being commonly sold in Rouen at a moderate rate. Prevost, the well-known cultivator of Roses at Rouen, can attest to these facts.

THE ROYAL BOTANICAL SOCIETY.

First Exhibition for 1845.

It is rather our business to select any new or extraordinary plants and flowers for description, than to give any details as to the splendid exhibitions which are held, from time to time, in the Park, and the May Show affords but little opportunity. It was, however, remarkable for some things worth notice, and we are rejoiced to find, among other subjects, a decided improvement on the best of our Geraniums; and it may be worth while, as a sort of guide to our floral readers, as well as plantsmen, to give a brief sketch of each of the few novelties that were exhibited, under their several heads.

Geraniums.—A very beautiful rosy variety, with a blotch in the upper petals, of exceedingly fine form, giving us hope that, in time, the model laid down for a perfect Geranium may be equalled. This flower was large, very nearly approaching the circle, thick petalled, and of good bright rose colour. It was called *Patrician:* it is the best we can boast in the present day. *Hebe's Lip* was one of those varieties which have undefined under petals, full of skins of deeper colour, with dark upper petals, like several that we know of the kind, but far better in form and thickness of petal. These two were the only ones deserving notice.

Cinerarias.—These were abundant, and none of excellent quality; but there were many that would shine among the very poor varieties now grown in collections. It is hardly worth distinguishing one more than another; for there was nothing to command much of a preference. The following were above the present average:—Mr. Henderson's Attraction, Cœlestina, Bijou, and Splendens. There were two others, said to come from York, the Countess of Zetland and Maid of Orleans. Mr. Kinghorn showed Lady Prudhoe. One was called Azurea alba, but we do not know to whom it belonged; and there were also in the same predicament, the Surrey Hero, Desirable, and Purpurea. All of these had moderately broad petals, and had sufficient recommendation to get them places in collections.

Rhododendrons. — Mr. Pince showed a splendid new hybrid called Campanulatum hybridum. The flowers were enormously large; French white, with slate-coloured spots on the upper portion of the petals, which were, to all appearance, thick. It is by far more handsome than the original species, and, as we were informed, as hardy. Smith of Norbiton showed two remarkable for their extraordinary colour. One was called Macranthum, the other Album florum; they were of an extraordinary bronzy fawn colour, one very considerably darker than the other: these were valuable only for the colour.

Nemophila.—A new seedling variety of this attracted some attention; it was shown by Mr. Turner of Chalvey. The flower is of the form and size of insignis, but the blue was paler, and it was all over striated with white, and very distinct. He informed us that he found the seed grow constant.

Tropæolum Lobbii.—A new importation, represented in one of the periodicals, and at the time noticed by us, was exhibited there, and proved (unlike most of the novelties that are figured) more than equal to the plate; the form was exact, but the colour fell greatly short of the reality. It is a very brilliant object, and Messrs. Veitch and Sons had not said one word too much of it.

New Lisianthus.—A plant was exhibited by Messrs. Veitch of a new Lisianthus, from the Swan River. The foliage was very large, but it was not in flower; nevertheless, it must prove a novelty.

Azalea Indica.—Mr. Kinghorn exhibited a variety called Murrayana, a very handsome, rosy-coloured flower, of a better form than almost any of the family; and, seeing that all the other new ones were very different in this important quality, the less we say of them the better.

Gompholobium.—A new one, from the Swan River, was shown by Messrs. Lucombe, Pince, and Co. These plants are all bright and pretty, with the yellow and orange pea-flowers, which so abundantly cover them. The subject of the present notice is of elegant habit, the flowers larger and richer in colour than the others; the bloom, in fact, is orange and brown; and expand well.

Calceolarias.—A great abundance of these flowers was exhibited by many persons; but, although we were informed that certificates had been granted for some, there was not one that deserved such distinction.

Pansies were rather plentiful, and Mr. Brown had a number of seedlings in his stand of thirty-six; but, as they were not all named, so that we could refer publicly to them, we can only say there were one or two very promising.

Taking the Show as a whole, it was very grand; and every pains seems to have been taken to render bad weather as tolerable as possible. But there must be more care in distributing certificates to new subjects. There is nothing assists more completely to deceive the public than ill-adjudged prizes; nor does it advance the permanent interests of the Society or the science; for indulgence in such matters pleases none but the receiver, and he is immediately pointed out as the possessor of a prize, or a notice which he does not deserve: thus it does not serve the permanent interests of even the man who receives the prize. We are quite aware that the motive for being liberal is good, that the judges think they had better err on the indulgent side than the reverse; and in all things but novelties, they are right; for it does no one harm—it deceives nobody; on the contrary, when prizes are given liberally to things which do not deserve them, that fact is made use of to recommend them to the public, who, hearing that prizes were awarded at the Royal Botanical Society, make sure that there was some quality about it which makes it worth buying. They had better err on the illiberal side than the liberal in dealing with new subjects.

RIPENING GRAPES ON OPEN WALLS.

BY B. MAUND, F.L.S.

As the Vine is a native of a climate warmer than that of Great Britain, artificial heat must be used to produce grapes in their greatest perfection; still, if this fruit be not desired in undue season, it is not indispensable that expensive erections, with fires, be employed to produce crops of well-ripened, high-flavoured fruit. It is not generally known how very little assistance, in regard to warmth, the Vine requires to enable it to mature its produce in England.

In the summer of 1843, I enclosed the shoot of a Vine, having on it several bunches of fruit, in a small glass-case, only two feet nine inches long, thirteen inches wide, and projecting five or six inches from the wall. This protection was not given till the latter end of May, but had the effect of ripening fruit three weeks or more before that which was exposed, and of greatly superior quality. The fruit was exhibited to the Horticultural Society, and particulars appeared in No. 51 of the Gardeners' Chronicle.

To ascertain the effect produced by an experiment on even a smaller scale, I last year enclosed a single bunch of the Pitmaston Grape in a small glass-case, made for the purpose, only about nine inches square. It was placed over the fruit, and fastened to the wall, when the flowers were falling, and not removed till it was ripe. A finer bunch of fruit, ripened without fire-heat, I never but once saw; notwithstanding the exposed fruit was imperfect, and but partially ripened before frosty nights destroyed it.

These experiments, in themselves, are of little value, excepting as indicators of what may so easily be effected. This, at the present time, is of more importance to the fruitist; inasmuch, as both nature and our Government encourage the employment of glass for the produce of this valuable fruit. I should mention that Thomas Clarke, Esq., of Birmingham, used glazed frames before his out-of-door Vines, three or four years ago, with great success, and would, I am quite sure, have pleasure in affording information on the subject.

BERBERIS TRIFOLIATA.

(*Hartweg.*)

THE THREE-LEAFLETTED BERBERRY.

This is a very handsome, half-hardy, evergreen shrub, which, both when in bloom and otherwise, has an ornamental appearance. The leaves, on long stalks, are compounded three-leaflets, each of which is prickly at the margin, like those of the holly; in colour they are dull green, with pale bluish, or ash-coloured veins or lines, giving them quite an ornamental appearance. The flowers are borne in short axillary racemes; they are small, yellow, and cup-shaped, consisting of six little rounded hollow petals; and, though individually small, they are produced up the greater part of the length of the branches, sufficiently numerous to make a tolerable show.

Mr. Hartweg found this species in Mexico, near the Haciluda del Espiritu Santo, on the road from Zacatecas to San Luis de Potosi, an immense plain, chiefly occupied by Opuntias, stunted plants of Prosopis dulcis, and Yuccas. There the Berberis extended over large tracts of country; but Mr. Hartweg did not see it in flower. The people there call it Acrito, and the fruit is much eaten by children.

This Berberis cannot be considered to be sufficiently hardy to stand in the open air without protection. Like some of the pinnated or ash-leaved Berberries, by some called Mahonias, it will only succeed out of doors when planted against a wall, in which situation the southern or western aspects are preferable. Under these circumstances, however, they grow freely, and, with their very handsome foliage, their numerous yellow flowers, for the most part produced in the spring, and the rich purple fruit which in most of the species succeeds them, are really good plants, and among the most appropriate that can be selected for such situations. They prefer a sandy, loamy soil, and a situation rather dry than otherwise. It is of some importance, too, that their branches should be regulated, so as not to become crowded in one place, and scanty in another, but so disposed as to cover the space, not too thickly, or they will not show their foliage to advantage.

The Berberries of this nature, referred to above, are, Berberis fasciculatus, B. tenuifolia, and B. pallida, to which the smaller growing B. dulcis and B. empetrifolia might be added, as showing themselves to the best advantage, when trained against a wall, although not requiring it as a means of protection.

HORTICULTURAL NOTES.

Hot-water Pipes.—Economy has in some cases suggested the use of pipes of earthenware, for the circulation of the heated fluid, in the interior of structures requiring to be artificially warmed; but experience has proved that it is not a good material for that purpose. It is a bad conductor of heat, since pipes of metal have proved satisfactory, where the same area of pipes of earthenware, attached to the same boiler, have failed to keep up the temperature. They are liable to another objection, that of bursting a little beyond the joints when in action. The joints, though sometimes said to be difficult to form, are quite water tight, when made with good common cement.

Mushrooms.—With reference to the general practice of growing Mushrooms in dark houses, Mr. Hankin says, "I feel confident that *light* and *air*, where an equal temperature can be preserved, are *essential* to the growth of the Mushroom, and that they do not *blanch* by the exclusion of either; if they did this, the gills would also turn white proportionably: a dark, confined atmosphere will never produce a healthy, full-grown Mushroom." Mr. Hankin is a very successful cultivator. [We give this upon the authority of the Gardeners' Chronicle.]

Pentstemon gentianoides, var. diaphanum. (The transparent Gentian-like Pentstemon.)—This plant differs from the old and well known kind in having rather larger flowers, and the under half being almost colourless, and so thin as to be nearly transparent. It was raised from seed received from the Tierra Fria of Mexico, in the garden of the Horticultural Society, and is a very handsome perennial plant, nearly, or in many places quite, hardy, growing two or three feet high, and bearing its crimson tube flowers abundantly from July till September.

Monster Cactus.—The Royal Botanic Garden at Kew has lately received a remarkable Cactus of immense size, and of a new species. It is called Echinocactus Visuaga, (the latter being the native name); and some idea of its immense size may be gathered from the following statistics:—The weight of the Visuaga is 713 lbs. Height, from the surface of the earth, 4½ feet. Measure over the top, from the ground, on each side, 10 feet 9 inches. Circumference, at one foot from the ground, 8 feet 7 inches. Number of deep angles, or costæ, 44. The removal of such an immense specimen, and its safe transmission from Mexico to this country, has been an arduous task, especially as the Mexican roads and means of conveyance are ill adapted for such an object.

Petunias.—We have few finer tribes of plants for bedding out in the summer season than the Petunia, and few genera in which a greater improvement has been effected as to the quality of the flower. One of the finest varieties of the purple class for forming groups is undoubtedly Violacea superba, a variety sent out some years back by the Horticultural Society, and which has the property of holding its colours until the flowers are quite withered. Prince Albert is another variety possessing nearly the same properties, with a little improvement in form; and Duncan's seedling Elegans with a white throat, Beauty, Gem, Newmanii, and Newmanii superba, are flowers of nearly the same colour (purple); the last four are of unusually large size. The great disadvantage of the last four is the looseness of the flowers, and their tendency to burn or lose their colour under bright sunlight. Lady Peel has the same fault, and, though a remarkably free bloomer, must be discarded in consequence. Of the pale colours, a very distinct sort is Ivery's Pet, a small flower, not much larger than a Nierembergia, with a pale ground, the throat pencilled with dark purple, and the edge of the flower beautifully mottled with dark rose. Magna Charta is a larger flower of the same character, the mottling being distributed over a broader surface; and this mottling is not the result of decay, as is the case with Miller's Punctata, but is the natural and proper colour of the flower. Reliance has a finely pencilled throat, on a ground of very pale lilac, and slightly edged with purple. Kentish Beauty has a very dark pencilled throat, on a deep lilac ground; and Enchantress has the same character of throat on a rich peach-blossom surface. Ovid is a large flower of superior form, and of a deep purplish-lilac colour. Triumphans, or Rosea alba, has a white flower edged with deep rose. Erubescens is an old but an abundant flowering kind, of a pale lilac colour; and Lady Sale has very delicate pale lilac flowers slightly edged with pale rose. They may all be propagated by cuttings, which root freely in a gentle heat; but, as they are liable to become long-legged, spring propagated plants are preferable for bedding out.—*Gardeners' Chronicle.*

CERADIA FURCATA.—One of the greatest novelties among plants, within a short period, is the Coral-bush of Ichaboe (Ceradia furcata, *Lind.*); but it is one of the most insignificant looking things imaginable. It has been received from the west coast of Africa, indicating a dry and sterile climate. It has been suspected to be the plant yielding African Olibanum, a fragrant gum-resin, burned as frankincense; and little gummy exudations are put forth wherever a wound occurs on the stem; but it appears that this is totally destitute of fragrance when burned, and altogether different from the substance to which the name of Olibanum had been applied. It is interesting as being the first botanical introduction to this country from the famous guano island of Ichaboe. It has been grown by Messrs. Rollison of Tooting, and proves to be a plant of the composite order, and nearly related to the fleshy stemmed shrubs, formerly called Cacalias, but now known as Kleinias. It forms a singular-looking dwarf, shrubby, with very much branched and forked fleshy stems; and a few succulent, spathulate, light green leaves, are produced towards the extremity of each ramification: the flowers are small, in solitary heads, of a pale yellow colour, and are so insignificant as to be hardly visible among the leaves.

AMERICAN BLIGHT.—Mr. Hamp, of South Lambeth, recommends water heated to 170°, to be syringed on the affected parts of trees infested with American blight; or if the trees are high, to be used a little hotter, and applied with the garden-engine. If well done, he says, the trees seldom want a second application; and no apprehension need be entertained of injuring the trees by thus treating them.

EXPERIMENTS WITH PINES.—An experiment was tried at Brookland, during the last year, with respect to the soil for pine-plants. One-half of a pit of pine-plants were planted in prepared pine-soil, of a loamy nature; and the other half in fine tan. The management, temperature, &c. were in each case precisely identical. Those in the loam look as well as pine-plants need look; whereas those in the tan are a complete failure.

PEAT-POTS.—These are recommended, in the United Gardeners' Journal, for planting annuals and summer-bedding plants into, previously to transferring them into the open ground. The advantage of them is, that being sunk under the surface without disturbing the roots, and being formed of a soft material, the roots easily penetrate, and thus grow away, when planted out, without sustaining any check in the operation. They are made by taking any quantity of peat-earth, adding to it one-fifth of leaf mould, and one-fifth of rotten manure, and mixing this up with water to the consistence of grafting clay, or stiff mortar: a round piece of wood, of the size the pots are required, is nailed on a flat piece of board, and the pots formed around this, about three-fourths of an inch in thickness, and laid in a shed to dry and harden: they are then used in the same way as earthenware pots.

COVERING HOT-HOUSES.—Those who have paid little attention to the subject of maintaining the requisite temperature in hot-houses, with the least possible expenditure of fuel, cannot be aware of the difference produced by a covering even of thin material spread over the roof. In one of the stoves in the Botanic Garden, Regent's Park, a covering of thin calico, mounted on rollers, and used during summer for the purpose of shading, has been the subject of experiment during the past winter; and it was found that the difference produced by the covering, amounted to as much as 8°, thus avoiding the excessively injurious effect of applying 8° more of artificial heat than was actually required to maintain a given temperature.

PRUNING FOREST TREES.—Mr. Kay, of Finchley, after much observation, thinks the following scale of pruning will be found generally practicable and successful:—The first or second year after heading down newly transplanted trees, reduce the head one-third; the next, one-fourth; and so on in proportion, until the stem of the tree is of the required height. He considers winter pruning the best.

POTTER'S GUANO.—Mr. M'Millan, in applying this substance to potted plants, met with the following results:—Leschenaultias benefited, the plants dressed with it did not damp off so much as others. Camellias and Oranges, much improved. Azalea indica, Zichyas, and Hardenbergias, injured. Boronia serrulata, Phœnocoma, and Elichrysums, grow most luxuriantly. Ericas seem all fond of it, and grow very vigorously. Verbenas, Heliotropes, Geraniums, and Fuchsias grow out of character. Roses are improved. A very small quantity killed Salvia patens. Achimenes and Gesneras were benefited by a weak solution, but when used stronger they died. Except in the last case, it was used by sprinkling a little of the guano on the surface of the soil, and stirring it in.

WOOD ASHES.—Ground infested with maggot, and on which carrots could not in consequence be grown, was cleared, and a fine crop of carrots obtained, by using a dressing of wood ashes. A portion of the same ground to which guano was applied, when the carrots were a little advanced, and infested with the maggot, failed to produce any benefit: this was at Balcarres Garden.

ARAUCARIA IMBRICATA.—The plant of this noble tree at Dropmore, has the branches perfect to the ground. Since 1837, it has grown fifteen feet in height, thus giving an average of more than two feet in a season, a progress worthy of note, when it is recollected that this tree has the character of a slow grower.

HAND-GLASSES.—Almost all these articles are inconvenient and fragile at the best. The frames, except cast-iron ones, wring so much, that the glass is seldom long in repair, and if they are of cast-iron they are heavy and inconvenient. There is every chance of the best being in a great measure superseded by the old-fashioned bell-glass, or something of the same manufacture of a better form. It is, in the first place, to be recommended as a matter of economy, and next as a subject every way superior for use, nor will it be so liable to constant accident. Those who possess, and many do, some of the old bell-glasses, and have been used to them for years, will testify their superiority; and they were only superseded by the leaden zinc, and ultimately copper and cast-iron framed hand-glasses, when the increased duty increased their price. The slighter and smaller bell-glass used for cuttings, and almost indispensable in propagation, are superior to every manufactured contrivance with frames. The superiority of one over the other demonstrates the effects on a larger scale, and we may expect to see once more blown glasses in use instead of those made of small pieces in metal frames wherever large glasses are required.

REDUCTION ON GLASS.—A misapprehension has been caused by some of the public journals having given out that the trade refuses to let the public have the benefit of the reduction in the duty on window-glass. A sort of tirade has been run out against the companies, which may apply to some, but not to all. There is no manner of doubt that glass of a particular kind adapted for greenhouses, conservatories, and other horticultural buildings, ought to be reduced quite the full amount of the duty taken off; but it should be recollected also, that glass above a certain size was entitled to the drawback for exportation, and that squares under a certain measurement were not entitled. The consequence of this was, that all the waste, as it was called, which meant pieces under a certain size, were never exported, but had to be used up in this country; for squares entitled to the drawback could be supplied actually cheaper than the smaller; therefore squares under the size never bore a real proportion of price to those above it, and therefore we must not calculate upon the small glass yielding the public what the larger glass does; and besides this, there is a treble demand for glass, which cannot but advance the price of the article, the demand for labour, and the difficulty of procuring it. There is, however, plenty of glass to be had at a third of the price it bore previous to the reduction of duty. Glass for horticultural purposes will ultimately be had at three-pence, and perhaps two-pence halfpenny, per pound, and a pound to the foot will be ample strength.

NEW BIZARD TULIPS.—Mr. Wilmer has exhibited a Bizard Tulip which has every appearance of a cross between Polyphemus and Austria. The outside was a little coarse, but the inside was as fine as need be. It is a better yellow than Polyphemus, and the texture appears good. It was awarded the Bizard prize at the Hampton Tulip Show, and was named Cardinal Wolsey. Mr. West of Shillingford showed another, which was a good colour and pretty inside, but it was almost egg shaped, and appeared difficult to open. Mr. Lawrence showed a most beautiful specimen of a Bizard newly broke, after the style of a fine Donzelli, but so superior, as to be generally admired.

WIREWORMS.—There is no plague in a garden more destructive than this little industrious, though slothful-looking, insect. Where they abound, whole crops are destroyed in a few hours; and if a solitary specimen gets into a pot of carnations, it will not only destroy those which it finds there, but, if undiscovered, will go all through the pots on the ground. One might almost think that a pair of carnations would feed a score of them for a month; but it attacks the root, eats its way upwards to the pith, kills the plant, and makes off for another. When turned up or disturbed, the wireworm seems half asleep, and very slow in its movements. They are rarely seen to progress much, but they must be rapid travellers, or one could not do a tithe of the mischief it accomplishes. The only way to destroy them is to catch them: their shelly hides defy ordinary means of destruction. Salt and lime-water are of no use whatever. We have since tried boiling, but they can stand water of a high temperature without any apparent ill effects. To extirpate them a crop must be sacrificed. By thrusting carrots into the ground many may be caught; every time you pull up the carrot, you will find some sticking to it, eating their way in. The common daisy harbours them exceedingly, and we have seen beds planted round the edges with daisies on purpose to draw them from better things. Lettuces also entice them, and the very day after planting out you may see the leaves flag of all that are attacked. The place should instantly be disturbed, and the offenders sacrificed. Plant other lettuces in their places, and repeat the operation. But if ground has no crop, set children to fork the soil over, and catch them at so much per hundred; for they are unlike almost all other pests, and must get through the earth with great rapidity. If there be but a solitary one in a locality, he can only be detected by the mischief he has done; and frequently they are not to be found near the site of their operations, but perhaps at the very root of the next plant. Heaps of rotted turfs, the most useful of all soils for potted plants, are very much infested generally, and we have known the late Mr. Hogg of Paddington, in his day, to pass every grain of the mould in which he potted his carnations under his hand on a table, such was his natural and well-founded dread of the wireworm.

To make Artificial Coral for Rockwork.—Take four parts of yellow resin and one part of vermilion, and melt them together; dip twigs, cinders, or stones, in this mixture, and it will give them the appearance of coral; and are applicable to rockwork, grotto, or any fancy work, as a substitute for that costly article.—*Gardener's Receipt Book.*

Ink for Zinc Labels.—Take 1 drachm of verdigris, 1 drachm of sal ammoniac powder, and half a drachm of lamp-black, and mix them with 10 drachms of water; and this will form an indelible ink for writing on zinc.—*Ibid.*

Autumn planting Potatoes.—On the 20th of December last, I planted both early and late sorts as an experiment, and planted them in an exposed situation: the tubers were buried from two to three inches below the surface, and I planted them without any horse or cow manure, but put a little guano in the drills; and they have had no artificial protection whatever. I have no doubt whatever, but that the earth was frozen, both above and beneath them. I think the severe frosts we have had this winter quite sufficient to put the thing fairly to the test; and I have examined those I planted on the 27th of March (the frost having broken up on the 21st), and I find that they are not injured in the least; as a further proof, I had one of them boiled to ascertain if it was affected with that sweetness that is sometimes caused in potatoes by the frost, but I found it was not in the least affected. The only effect the late severe winter has had upon them is, that it has prevented them from vegetating so early as they would do, when there is but little frost.—*Saul.*

British Orchidaceæ.—About six years ago, I had a quantity of the spotted palmate orchis (Orchis maculata) collected at the time they were coming through the ground in the spring, and planted a bed of them: they sustained scarcely any apparent injury by the removal; and though O. maculata is far from being the handsomest of the genus, they looked very beautiful. I potted three or four roots of the early purple orchis (O. mascula) in thirty-two sized pots, in which they bloomed well; and the next autumn they were potted, forced, and in every respect treated as hyacinths, and were as good as though they were naturally blooming in the open air. I feel certain that if the orchises are skilfully treated, the size of the flowers, and indeed the general appearance of the plants, as compared with those in a natural state, would be materially improved.—*U. Gard. Journ.*

Iron a Remedy for Blight in Pear Trees. A Correspondent states, that he has found iron ore, or cinders of iron, placed round the roots of trees, drives away the insect which deposits the eggs that produce the worm. Having tried this remedy in a sandy soil, and in a stiff soil, and in places distant from each other, and having driven off the insect when the trees of others were very much injured or destroyed in the neighbourhood, he advises all those who are troubled by these insects to try the use of iron, rather than be under the necessity of continually topping off the limbs which contain the worm, or young insect. He thinks it probable that the iron is unfavourable to the worm, which drops from the branches, and makes its wintering place at the root of the tree, and then the insect avoids an unfavourable place for its young. But whatever may be the theory, it is sufficient that iron has the desired effect.—*Gardeners' Gazette.*

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"The parts before us teem with interesting information. Indeed, we have no hesitation in saying, with respect to one department of this Magazine (and it is one to which we have given some attention), that it excels any publication of the kind we have ever met with before. We refer to the information with regard to the cultivation of flowers, which is altogether so full, plain, and practical, that it affords at once what could be acquired otherwise only by years of inquiry and experience. To the professional florist, as well as to the amateur, therefore, the work will be of the greatest service, and we cordially recommend it to their attention. The illustrations, which are numerous, are faithfully and beautifully executed. The writing generally is elegant and perspicuous, and we trust the Magazine will have, as it deserves, a most extensive circulation."—*Glasgow Courier.*

"This, the third number, bears out all we said of the two former ones. It bids fair to become a well-established and deserved favourite."—*Leicester Journal.*

"The writer, with great good sense, aims at being more familiar rather than more original than his predecessors. This Magazine is cheap, beautifully and profusely illustrated, and embodies a selection of articles, both practical, and scientific, which must greatly tend to the advancement of horticulture."—*Western Agriculturist.*

"The object of the present Magazine is the practical application of science to horticultural improvement, and towards this all knowledge is requisite. The readers of this Magazine will be informed of every garden operation at the season required; and, as it appears to us, in a clear and satisfactory manner, so that every man may be his own gardener,—not only in things common and useful, but in respect to the choicest and most difficult to raise of garden produce. The illustrations are abundant and beautifully executed."—*Keene's Bath Journal.*

"A new periodical, addressing itself to all who love gardening. It purposes to be eminently *practical.*

The writers make it their rule to premise that their readers know nothing about the subject they treat of, so they begin with the beginning, and tell them minutely what is to be done. The topics treated of in these two numbers are very various and interesting, and with the aid of this Magazine few will need any other assistant beyond physical strength in the management of their gardens. Woodcuts are introduced where required for the purpose of explanation or illustration."—*Somerset County Gazette.*

"Of the *Horticultural Magazine* we can conscientiously express our unqualified approbation; it is an extremely valuable publication, and will no doubt become, as it well deserves to be, *the* Gardener and Practical Florist's organ and oracle. The papers are carefully written, the information varied and correct, and the illustrations numerous and well executed."—*Maidstone Journal.*

"The *Horticultural Magazine* is a respectable monthly devoted to the pursuit to which its title refers. The articles are above the standard of horticultural literature. The literary notices are well written."—*Derbyshire Courier.*

"The value of this periodical is likely to be much increased by some papers on 'Landscape Gardening,' of which one appears in the present number. A notice of Maria Calcott's 'Flowers and Plants of Scripture' is interesting. The woodcuts are very good; and altogether the work promises well." — *Great Western Advertiser.*

"The information it communicates is given in a clear and practical form. It is well adapted to render the operations of the garden not only intelligible but attractive, both to amateurs and professional cultivators, and to popularise a subject which, almost more than any other, is entitled to encouragement. The editor has only to continue his endeavours to fulfil the promise he makes in his prospectus, and his work will be as much esteemed as it will be useful and interesting."—*Gloucester Journal.*

"We heartily recommend this Magazine. The information is varied and valuable—nothing that is useful seems to have been lost sight of. The Horticultural notes are the best we have ever seen. Taken as a whole, the *Horticultural Magazine* is the most useful in the range of publications devoted to horticulture in general."—*Shrewsbury Journal.*

"Our horticultural friends should not be without this work; they will find it both useful and improving. We can cordially recommend it."—*Wakefield Journal.*

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"This periodical contains a large quantity of information: very clear directions for beginners; novelties for the experienced. It is exceedingly well done."—*Gloucestershire Chronicle.*

"The articles in this Magazine contain a great amount of useful and interesting information to practical and amateur gardeners and florists, and its pages also prove that careful attention is given to supply such articles as are ever found agreeable to general readers. The wood engravings of plants and flowers with which it is embellished, are likewise deserving of warm commendation, and will afford much assistance to students in the sciences of Horticulture and Botany; as a candidate, therefore, for a share of public favour, its pretensions will be found deserving of a very kind and liberal consideration."—*Preston Pilot.*

"A most excellent and practically valuable *depôt* of intelligence in the particular branch of science to which the publication more immediately relates, and which we can with full confidence recommend to our readers."—*Somerset County Herald.*

"For all useful purposes, there is not, of its class, a better Magazine published than the *Horticultural.* Divested of crude theorems and botanical technicalities, it recommends itself to general perusal, when others, more aspiring, eschew the *vade mecum* (especially the attribute of the work before us), and adapt themselves for the seclusion of the closet. The articles on practical gardening, on plants under glass, in the conservatory and hothouse, in the kitchen and fruit gardens; its reviews, and notes from eminent horticulturists, on novelties in the flower department, together with its excellent illustrations,—all combine to make this publication as much sought for as it is deservedly read."—*Taunton Courier.*

"The *Horticultural Magazine* is well conducted, and presents an agreeable variety of matter. Its style is sufficiently untechnical to interest ordinary readers—a great merit, in our eyes."—*Derbyshire Courier.*

"As a practical work for the use of horticulturists and private or amateur gardeners, we know of none better than this."—*Birmingham Advertiser.*

"If there be any of our plant and flower fanciers who have not this periodical at hand, they will lose many exellent suggestions which are not to be readily met with elsewhere. At this season the information which it contains is particularly valuable on the many subjects which it so satisfactorily discusses; and, did we quote what we wish, we would transfer almost every chapter to our columns."—*Sheffield Iris.*

"The *Horticultural Magazine*, amid much that is interesting to the Horticulturist, contains a fair proportion of matter which may be read with advantage by all classes. The article on "Waste-land Planting," by Mr. Grigor, of Norwich—to whom, our readers will remember, the Royal Society's prize for an essay on 'Fences' has just been adjudged—is well written, and full both of instruction and interest."—*Derbyshire Courier.*

"This illustrated periodical is devoted to *Practical* Gardening. It is, therefore, particularly fitted for amateurs, to whom its contents are chiefly addressed. It has a great variety of information on the flower garden, the greenhouse, the conservatory, the kitchen garden, the fruit garden, &c. The articles are not too learned or too long, and therefore they will be intelligible to ordinary people."—*Somerset County Gazette.*

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THE BEECH.

By James Grigor, *Author of the* "Eastern Arboretum."

The Beech is not generally reckoned of great beauty,—at least so the older writers on trees have written of it; but this opinion is gradually giving way to a more just appreciation of this very useful and ornamental object. When planted in lines, avenues, or in such places where it is in any way confined, it becomes a high tree: in open lawns, where it stands singly, it is, as Scott observes, "a hill of leaves;" and, indeed, wherever it grows, if it grow freely, it is exceedingly beautiful. Look at it in May: at several feet from the ground its spiky buds become soft and silky, and, in a few days more, this softness and silkiness wear onward and upward,

"Till the whole tree
Now swaggers in its leafy gallantry."

The Beech has an amazing number of leaves, regularly disposed all over its surface: hence its shade has been counted on all hands, and in all ages, as preferable to that of most other trees. On this account Greece and Rome held it in especial favour, and their poets constantly refer to it as affording a most grateful shelter.

It has been often observed that this tree is a lumpy and formal grower: so it is, in many instances, where the soil does not suit it; but in Norfolk, and no doubt in other places, it not unfrequently presents a grand and stately outline, resembling the ash under its best forms. At Beeston Hall, the seat of Nathaniel Micklethwait, Esq., it is a high and graceful tree, tapestried after the manner of the finest weeping birches, its ramification being irregular, and its outline the very reverse of the character usually assigned to it. At Wolterton, also, it rises into a noble figure, with masses of pensile spray.

It is to be borne in mind, that the proper situation for this tree is in the more sheltered parts of park scenery, not far from the mansion. No one with any judgment would place it on the brow of a hill, or in any exposed situation where it would be liable to be vexed with the winds; for, under such circumstances, its leaves become unsightly; and, besides, even under its best aspects, its general character seldom rises beyond the *beautiful*, so that it is peculiarly unfit to combat with the blast. It is true that it is often found in the wilder and more mountainous parts of the country; but it will be observed that the finest specimens, though in the neighbourhood of tempestuous scenes, are yet free from their effects, rising in sheltered slopes, or in the areas of natural amphitheatres, formed by the sweep of hills.

It will be readily admitted, then, that the beauty of English park scenery is, in a great measure, indebted to the presence of the Beech. No tree harmonizes better with the greensward; and it may be safely asserted, that, in the soft recesses of our pleasure-grounds, it is indispensable. Over bold and striking scenes we find the oak presiding, and in such places it is without a competitor; but in quieter spots, where the eye has simply to be solaced, we call in the aid of the Beech.

Let us pass on to its strictly useful character. In this respect it is of the greatest service. Though itself requiring shelter, especially when planted for an ornament, yet it will grow tolerably as a *shelterer*, if not exposed to the sea breeze; and when closely planted around fields and gardens, it rises into a high screen, protecting everything in its neighbourhood. Many of the trees retain their leaves during winter and spring: hence it is often formed into hedges in nurseries and gardens, where it serves almost all the purposes of an evergreen fence. It rises rapidly; and, for the uses in question, it will readily grow on all descriptions of soil.

As a timber tree, the Beech is deficient. It has been extensively used in some quarters lately for bearers to the rails of several railways; but, in this respect, it is giving way to the pine tribes. For household furniture, stocks, and handles for carpenters' tools, &c., it continues to be in considerable request; but, as the wood is brittle and uncertain, it can never be used, even when of sufficient length, for the important offices to which the pine is allotted.

In its living state, then, as an umbrageous object, arrayed in its "pomp of leaf," I would particularly recommend the Beech. No tree raises more pleasing ideas within us whilst it is unfolding its buds; and when its leaves are fully expanded, no other foliage, so far as I can recollect, reflects the sun's rays so brilliantly.

I am by no means an advocate for clipping and shearing, or for distorting in any way the productions of Nature; and least of all for clipping trees into figures, either of man or beast. There is one idea, however, which, in certain situations, I should like to see adopted with regard to the Beech. I mean, the formation of shady balconies, which might be easily formed with the branches in its growing state. These galleries might have a series of seats behind, and have balustrades in front, formed also of the living tree; and the steps leading to them might be either formed of the live branches, or artificially, and woven over with the spray. Such seats might be made to command a charming view of a flower-garden, or such other scene as might be most desirable, and would at any rate be prized by many who are fond of novelty or seclusion.

The plants are always raised from seeds, or *mast*, as they are usually called, which ripen in October. Immediately after being gathered, they should be spread upon an airy loft till the month of February, when they may be sown in light soil well sheltered. They should be sown so as to lie about an inch apart, and, if the soil is heavy, covered only to the depth of three-fourths of an inch. After having remained two years in the seed-bed, they will be fit to be transplanted into lines, where they may stand for a like period, previous to their being disposed of for life.

PRACTICAL GARDENING.

OPERATIONS FOR JULY.—THE FLOWER GARDEN.

Carnations and Piccotees are now rapidly approaching their blooming season, and their buds must be reduced to two or three on each stem. These stems must be tied loosely to the stakes; as they grow up, the tie should slip up with them, otherwise they will require constant watching, for the stem, if confined, would soon break. They may be watered once of half-a-dozen times with liquid manure instead of water; it encourages the growth of the flowers. As the buds indicate bursting, have them tied round the middle with a piece of bast matting or worsted, and tear down the calyx to the tie at each division. And now is the time to dress flowers; we mean, while they are opening; for when the petals are brought down into their places, and grow there, we have no trouble in the dressing after they are cut. As the guard or large petals are developed, they should be carefully drawn down with a pair of flat pincers, so as to form a circle. As the flower advances, bring down enough to make another circle of petals, on the top of the first, allowing those of the second row to cover the joints of those on the first. If in a Bizard you find any petal without the two colours and the white, or in a flake you find any without the colour and the white, you must mark the flower that it will not do for showing, or, as an alternative, draw the petal out—there may be enough without it. As other petals open, you may bring them down in a third circle, and so continue, though it is seldom a fourth can be made perfect. The other petals, beyond sufficient to form complete rows, are generally left a confused bunch, which is very bad. The confused, ill-shaped, and often ill-coloured petals in the centre should be reduced to a few of the best, and here, among the centre ones, you must be doubly careful to examine for what are called run ones; that is, petals, or bits of petals, with no white in them, or no colour in them; or in Bizards with less than three colours, or two colours and white. It is usual to throw out a stand even of the finest flowers, if there be the smallest bit of a petal (and the centre has frequently such) that is deficient in the character of flake or Bizard. The flower, which is thus formed while it is growing, if done carefully, will far eclipse all that are left to be dressed after cutting. When the buds are swelling, it is usual among some of the great cultivators to water with liquid manure. We have never seen the necessity of this when the compost has been rightly made at first. Soft water from the rain or river has always been good enough for some excellent growers, and it will be well for any one who desires to try experiments to do it on a small scale. We have fancied that varieties submitted to liquid manure have not been so pure in the white, but have had a pinky cast. The Piccotee is in all respects to be treated like the Carnation, but we are not so tormented with run petals; nevertheless, if you find any run or self-petals, they must be removed; but, for the collection, it is not worth distressing a flower to remove a useful petal, because the flower is only the worse for it in examination, and so that you mark it that you may not cut it for show, it may remain. Some varieties are apt to throw down their guard petals, like lap-ears; if these are permitted to grow so they can hardly ever be brought up by dressing. To obviate it, a card is put on the buds to hold them up even, like a dish. The proper way of doing this, is to mark a circle of half an inch diameter in the centre of a round card; with a pen knife, make a cut from one side of the circle to the other, quite in the middle, then make another cut exactly across it, this divides the circle into four quarters. With two other cuts right across you sever these quarters, and by pushing your finger through the centre, the points, which are pushed out, form so many vandyke springs to hold on the card by. Make one cut from this opening to the outside of the card, which enables you to pass the stem from the side to the centre, and with the points, or vandykes, downwards, you draw the card up the bud far enough to keep the back petals flat, these points or vandykes keeping the card in its place. Wires, with open loops to them, and which can be placed at any part of the stake, are put to the stem, just under the card, and add support to it in its place; but, if the points are properly managed, they require none. The wire support to the stem enables you to separate the two or three flowers you have on, so as to be out of each other's way.

Dahlias.—Look well to the supports of the plants already growing fast, and add stakes where they are required. If the side branches are not well secured in the direction they are growing, there is every chance of their breaking. It is a common practice to remove many of the branches of Dahlias, but an erroneous one. If the Dahlia be treated as fruit trees are; that is, confine all pruning to the removal of the weak and useless, and such as are crowding some others, the flowers will come even larger than if the plant is cut more. The foliage of the Dahlia is of too much service to be wantonly decreased. With regard to the blooming time, there is something more to be done. When you have fixed your mind upon a bud or two on a branch, remove those buds in the immediate neighbourhood, for here the flowering strength is thrown into those left on; but while a Dahlia plant is growing rapidly you do no good by reducing it. Many advocate the covering of the blooms, and there is no doubt it preserves some, and blooms some, better in many respects than the open air, but the petals are always thinner, the colour always less vivid, and, except in the case of doubtful or imperfect whites, answers but little good purpose, and even this is a species of deception. Again, a bloom that has been exposed to the open air, will travel infinitely better than one that has been covered up. For those who are exhibiting, every flower should be cut off the instant it is past its prime, or is known to be useless. The flowers distress a plant greatly, therefore the ground set apart for plants intended to supply exhibitions should be kept strictly to its work; not a flower should be allowed to remain for anything but cutting, and the instant it is discocovered to be useless for that it should be removed. We have no objection to a shade which shall protect from wind and the rays of the sun, but neither air nor light should be excluded. Weak liquid manure may be applied advantageously now and then, and when they are watered, the whole ground about them should be well soaked, and not merely the roots. Those who have been in the habit of mulching their Dahlias have found that watering through the day has been of use, but there is a great evil in mulching. The dung about the roots forms such a harbour for vermin, that it becomes soon difficult to keep either the earwigs or thrip at all under. Again, any sort of covering about the ground encourages the fibres of the roots to come to the surface, and it will be seen towards the height of the bloom; on removing the litter, the fibres will have come to the top of the ground. Of course, if the dry weather once caused these fibres to dry, the plant would receive a check not easily got over. All plants are the better for going down a little after moisture; for this reason all partial waterings are bad. Dahlias should be well syringed over their foliage after the sun is down—it is of great service. Any plants that are not out yet may be put out, early this month, for the late shows. They need not be planted so wide apart, as they will not have time to grow large, like those planted in May and June.

Polyanthuses may be parted and planted out for increase, but show flowers will hardly grow large enough by the autumn, unless parted at the beginning of the month.

Geraniums, Verbenas, Salvias, Heliotropes, Petunias, and other potted

PLANTS, may be put out in the borders wherever there is space; and early flowers, that have done blooming, should be removed or cut down, to make more room, and leave the place more neat. Fuchsias in pots may be either plunged or planted out, and the beds and borders should be finished off every few days, for the decayed annuals, and other declining flowers, render this necessary.

ANNUALS, sown in the open ground, for planting out, may be used to fill up blank places in beds and borders, as they will bloom well late in the season. China Asters, Marigolds, Stocks, &c. will keep up a succession of flowers until cut off by the frosts. Balsams, and many other subjects sown late or stunted, or re-potted, all this time assist greatly in the decoration of gardens. Tie up all the long straggling plants and flowers that require it, such as Sweet Peas, Tropæolums, and Delphineums. Almost any sort may be still sown, to bloom late, and through the winter in pots, under protection. Mignonette, Stocks, Sweet Peas, and many others, will grow well in pots, and flower in the winter time in the conservatory or green-house.

TULIPS that are yet out in the ground must be taken up, and dried in the shade, previous to storing. All other spring flowering bulbs that are not yet taken up should be taken up.

PINKS.—The pipings of Pinks not yet taken off for striking should be attended to directly. This is properly done late in last month or early in this. They are broken off or cut up to a joint, their lower leaves stripped off, and placed in very damp, or indeed, wet soil, for it should be previously soaked like mud. Place the pipings in the soil, and cover with a hand-glass. Take care that they are kept moist until they strike. It has been the practice to cut the ends of the leaves off square, so that they may take less room; but this plan is now abandoned by the better florists, as they are found to be stronger and better with the foliage on, except some of the under leaves removed to make a space free for insertion in the soil. Beds of Pinks have gone off the prime of their bloom by this time in most seasons and places, and, where the seed is wanted, it is better to remove the decayed petals from the pod, for they hold the wet, and are apt to cause the seed to rot; and those which are seeding should have water in dry weather.

ROSES should be now budded, and when the young gardener has made himself acquainted with the routine and the principle of the practice, he can perform it twenty ways. The only thing required is to remove a leaf from the rose to be propagated with a slip of the bark half an inch long, and to place it under the bark of the stock on which it is to be budded. To do this, the most simple way we know of, and have directed, is that of cutting a slit along the bark of the one-year-old wood, and with the thin edge of the handle of the budding knife, which can be tucked under on each side, raise the bark of the stock from its wood. This is, however, facilitated a little by a cross cut, and the bark on which the leaf is can be tucked under and bound down with bast; for if the inner side of the bark of one can be brought in contact with the wood under the bark of another, and fastened there, the union takes place as perfect as a bud of the same tree. It will occur, therefore, to whoever performs this operation, that the quicker it is done the better; indeed, if either has time to dry, it is great odds if they ever unite at all. Now, the only requisite being once understood, it matters not how it is accomplished. Some cut round the piece of wood from whence the bud is to be taken, half an inch above the leaf and half an inch below it, just through the bark; then on the side opposite the leaf they cut a straight cut through the bark from one ring to the other. The bark may be separated from the wood with the greatest ease, by raising it on both sides the cut, and it peels off. A piece of wood on the stock is selected, about the same size, and a piece of bark the exact length is raised in a like manner, and peeled off; the bark with the leaf on it is placed where the other came off, and bound there, no matter whether the two edges of the bark meet at the back, so it but meet the bark of the stock at top and bottom. This budding is mentioned merely to illustrate the fact that it matters but little how the new Rose is budded to the old—the union is pretty easily secured. The cuttings of China Roses may be struck at any time, if a speedy increase is required; but it is only in cases of emergency that it would be done in this month. Cut off the dead blooms of all Roses, except those you mean to seed from, they are both weakening and untidy.

CAMELLIAS will have set their bloom, and may be inarched. This is done by cutting a stock, which is generally a single Camellia, or some other of little use, one third away on one side, to make a flat side to the stem; then cut the branch of one you wish to graft, so that the two flat sides will make a tolerably even join; then cut a gash very carefully in the middle of each flat side, downwards in one and upwards in the other, as nearly alike as possible, tucking the tongues thus formed into the gashes of each other,—this simply makes the join stronger. These plants are necessarily placed close together, and bound together at the place. In six weeks or two months the union takes place, when the piece grafted on the stock is separated from its plant and remains on the stock, and all the growing part of the stock is cut off, so as to leave this newly-grafted branch the only head. The advantage of this method is, that you may select a branch for inarching that has a quantity of bloom-buds set, so that the very first year the Camellia will be a blooming plant. The Camellias that have perfected their growth must be placed where they may ripen their wood without being excited to grow. They must be placed, therefore, in a cool and rather sheltered place, as mentioned before, and no place better than the north side of a wall, but where there is abundance of air, and some shelter from the worst rains.

AUTUMNAL FLOWERS, such as the Colchicums, Winter Aconites, Amaryllis Lutea, Autumnal Crocuses, Christmas Rose, and some others, or any autumn and winter blooming plants, may be planted, if not done before.

AURICULAS.—Continue to examine these, to see their drainage is right; pick off dead leaves, and throw them out of the frame, or away from the pots, and not in among them. Stir the surface of the earth if it should get mossy or green, and be very careful about watering. Large plants will sometimes so completely throw off all rain, that a plant may be starving for water, even in a dripping season, where they have had all the showers. This can only be avoided by closely examining the pots occasionally; for the plants may be so much distressed by drought as not to recover their health for a considerable time.

GERANIUMS.—Those out of bloom may be cut in pretty close, and all the cuttings be put in the ground, and covered with a hand glass. By the end of the month they will have struck root. Seedlings which are blooming should be examined, and all that have not some recommendation should be thrown away. Those only should be kept that have some very good points. The petal should be very thick, the colour very novel, the flower very round, the edge very smooth, or the bottom petal very wide, for this latter quality is scarce, and the absence of it frequently the only drawback to an otherwise good flower. Still any one of the points good in a remarkable degree ought to save a seedling, not for its value as a variety, but as a subject from which to save seed.

BIENNIALS and PERENNIALS may be sown, if not sown last month; for they will, if planted out as soon as they are large enough, get strength enough to bloom next season, which is all that is required of most of them. Any sown last month may be planted out.

PANSIES may be continually propagated, and especially from young side shoots, which make the best plants. Any that have done blooming may be cut down pretty close, and earthed up; even some may be put among the stalks, which may be nearly covered. These should be well watered, because it will induce shoots from the root; and, as we have observed, most of them will be rooted plants. The old stock being parted, will give many fit to plant out at once. The best of the branches taken off by cutting down the plant may be selected, cut up to a joint, and planted under a glass in the shade. New beds may be made, with struck cuttings, being prepared with a good dressing of leaf-mould or dung rotted to mould. Shade flowering plants, or blooms intended for show.

SEEDS and SEEDLINGS' SEEDS may be gathered as they ripen, if wanted; but when seed is not wanted, the sooner decayed flowers are taken from the plants the better they look, and the more the plant is strengthened. Seedling bulbs of all kinds, which have died down, should be carefully taken up and bagged in a dry place, or kept in boxes; but, as the one-year old bulbs are small, they must not be out of ground very long, nor be kept where it is too hot and dry.

POTTED PLANTS of all kinds, out of doors, must be well watered in hot weather, because a few hours' sun, when the soil is not kept moist, heats the pot, and kills the fibres next to it. Annuals, to be perfected in pots, should be shifted. The neglect of properly watering plants in pots that are set out in the ground is one of the most prolific sources of mischief. Few people consider, and we cannot mention it too often, that a plant may stand out in six hours' rain without being any the less entitled to the use of the watering-pot. Many tall and bushy plants completely repel every drop of water from the pots, to which, in fact, they are a roof of leaves. We have seen men careless upon such matters, and have known magnificent plants damaged, and some killed, before the evil was discovered; and there are many which had better be killed out of the way than spoiled, for it is only a temptation to retain old scrubs, that are a discredit to the collection they belong to. Let any one at all used to examine and think, remember for what a number of hours the ground under some trees remains dry, and they may well conceive that those plants which are, in proportion, more bushy than trees in general, will effectually throw off every drop from the pot.

RANUNCULUSES and ANEMONES must be taken up and carefully dried a day or two in the shade, under cover. All the spring planted and June blown ones will have died down by the end of the month, and they are subject to attacks of vermin if left a day too long on the ground. This is of not so much consequence in single and common Anemones, but with choice named flowers a sort may be lost easily.

CHRYSANTHEMUMS.—Take off top cuttings, and strike them under a hand-glass, with careful shading from the hot sun, as these cuttings will make neat dwarf plants for potting, or blooming in the borders. This is the only way to get dwarf plants; for by this time most of the sorts have got up eighteen inches, and if let alone till they bloom, would be a foot higher. The old stocks may be turned out in the borders to make fresh shoots, and bloom there.

The LAWN requires frequent mowing. Straggling branches of flowering and evergreen shrubs must be cut back, box edgings clipped, weeds removed, gravel walks rolled after rain, Roses, and other staked trees, examined, to see they are secure, climbing plants fastened as their shoots grow, all the dead and decaying flower-heads removed from plants, fancy shrubs, and American plants, whose seed-pods should now be allowed to swell, unless the seed be wanting. American plants are making their growth, and should be literally soaked with watering every few days; for the rain rarely gets to their roots, in consequence of their close foliage throwing it off; and cleanliness must be attended to in all things, and if anything directed to be done previously be still omitted, do it at once, upon the principle of "Better late than never." Things may not be so well for delay, but they may be better than none.

STOVE AND ORCHIDEOUS HOUSE.

IF, as in most cases of amateur growers, these are one and the same, a considerable moisture must be kept up, by syringing the floor and flues, or pipes, and the orchideous plants must not have the sun. They must be effectually shaded; and one of the best plans, as a simple one, that we know of, is to nail a piece of thick calico, or other cheap article, inside the glass, under the rafters, immediately over the end of the house where the orchideous plants are, and to syringe three or four times a-day, enough to soak the shade, as well as all under them. This tribe of plants are nearly all produced, naturally, in warm, shady, swampy situations. In fact, heat, shade, and moisture, seem as essential to them, as dryness, moderate temperature, and light, are to many other plants. The stove plants generally require constant watching, to observe whether there be any attack of the scale, mealy bug, or red spider, and immediate attention to eradicate it before it gets a-head. The introduction of an affected plant will, if unobserved a few days, affect the cleanest house and plants in the world throughout; and then it is exceedingly difficult to get rid of, and causes immense labour. Some of the richly flowering stove plants will be prolonged in beauty by a slight shade, or by placing them in some part of the house, near the foliage of other plants. Those who wish to propagate stove plants of any kind, may take off cuttings, and strike them under a bell-glass, in pots, plunged in the tan, and shaded, with a paper over the glass, during the heat of the day. Plants out of flower,—that is to say, which have done flowering, and are about to make growth,—may require shifting into larger pots. This may be seen by turning out the ball of earth, and observing whether the roots are matted round the pot; specimen plants, growing up for size, should be shifted every time the roots fairly reach the side, and before they are matted together; for, directly this begins, they lose growth, and by a continuance of it, and a little neglect in the watering, a premature bloom would be the consequence. Cleanliness is so essential at this time, that all the wood work, and crevices, and corners, should be brushed with weak soap and water; and if anything like the aphides, or other similar pests, appear, a fumigation with tobacco would be useful.

PITS, FRAMES, ETC.

THESE come in useful for all kinds of plants which have been shifted, and want to be shut up, or shaded awhile; also for the protection of seedlings just up, and seed sown in pans, boxes, or pots; but they may be appropriated to anything and everything,—strikes of cuttings, layering, inarching, budding, grafting, and otherwise propagating a vast number of subjects. Pits are easily heated by filling them with tan, in which pots and pans of seedlings may be plunged. They are also useful for everything that requires shading; but there are no directions that can be given for their management. One may have to do the work of the green-house, another the hot-house, a third propagation, and so on, *ad infinitum.*

In a general way, the pits and frames may be looked upon as tenders to ships, assistants to every department in turn; but they are always useful; for there are very hardy things that the sun in mid-day is too much for, and such should always be placed in a frame or pit, because the quantity of air, sun, and rain, can be limited without difficulty, and, if necessary, the glasses can be removed, and the whole of the weather admitted. The hot months are more trying to many things than the cold ones; and the Rhododendron and the Camellia, while small, may be handsomely set for bloom without difficulty in a pit, while in the open ground they would be stinted, and in the green-house drawn, and in both, perhaps, fail of being set at all. A pit, that is to say, a brick building four feet high behind, and two feet high in front, and six or eight feet from back to front, might be made into anything, from the mere protection of half-hardy plants, to the fruiting of pines and grapes, and the growth of orchideous plants, melons, or stove plants in general. Let the ground be sunk inside, so that there will be room for four feet thickness of tan, and room between the tan and the glass for what is required to grow there, and you may do almost anything that requires heat. However, modes of heating pits and other buildings are so various, so cheap, and simple, that no one need be at a loss who can get a few yards of iron pipe and anything that will hold a few gallons of water to boil. In the mean time, those who have not got this must make shift with tan and dung, and fermenting leaves until they can do better. Dung placed outside frames and pits will give a gentle heat, and it may be kept up by fresh supplies of hot dung, and the removal of the cold, and this should be done in the heat of the day.

THE GREEN-HOUSE.

Many of the plants from this department are now removed out of doors. Orange and Lemon trees are on the lawn, where they must not be neglected. Watering becomes one of the most necessary duties, because they are more exposed than when in the house, both to wind and sun. If they are fruiting too thickly, it is well to remove some of them from the parts where they are thickest, to equalize their bearing, strengthen the fruit left on, and to encourage the continuance of growth and bloom, which is of the most delicious fragrance. The pots, tubs, and boxes, in which they are growing, may be top-dressed with rotted sheep's dung, and the plants may, once in half-a-dozen times of watering, have liquid manure. Geraniums, that have done blooming, may be cut back almost to the middle stump, and all the cuttings be placed in the open ground, under a hand-glass. Those from which seed is being saved, and others not yet done blooming, may be placed in the conservatory, or in the open air. The cuttings of green-house plants, of every description, may be now struck freely, either with a trifling bottom heat, or in the green-house; but the former is the better. They must be placed in pots of light soil, with half an inch of sand at the top; the cuttings should just reach the other soil, but not be stuck in it; cover with a bell-glass, that will rest within the rim of the pot on the sand. This must be wiped dry every morning, and the sand must be kept moist. A vast many subjects will strike without this trouble. All kinds of Geraniums will root under a common hand-glass, in the open ground. The Geraniums that have done blooming may be cut close in, and be turned out of doors in their pots, as they are, in any part of the garden; or, if you want to grow them bushy, you must cut them into some little form. The cuttings may be prepared by dividing them into small pieces, the bottom cut close up to a leaf, or joint, and two eyes left above the soil, so that a piece with three joints, one at the bottom, and two above ground, will make an excellent plant, and whichever eye begins to grow best may be left on, and the other taken away. If the top one grows best, rub the bottom one off; if the bottom one grows best, cut the Geranium down to it. This, however, may be done when they are first potted after striking, and, in potting them, put the plant in low enough to bring the bottom leaf of the shoot close down to the soil. Therefore, if the top eye, or shoot, is the one saved, the stem must be sunk down to it. Any time in the month will do to take cuttings off to strike; indeed, a Geranium will strike any time of the year, and almost under any circumstances. The green-house itself has but little to do, and that little chiefly to protect the plants which have not yet flowered against sun and wet and wind. Plants which have done flowering may be shifted into pots a size larger, and when they have recovered from the check, may be placed in a sheltered situation out of doors. Cleanliness is more necessary than ever in the houses; and if the house be emptied of its plants altogether, a good forcible syringing all over the inside with a rose which will send the shower with force, so as to destroy vermin of all kinds from the crevices, along the rafters, the inside of the glass, &c. will be of the greatest service, and the floor, if paved, should be washed, and swept out clean, to make all alike. If the floor be only soil, scrape all the surface, and sweep all out clean. Let the shelves, and such parts as can be got at, be scrubbed, or brushed clean, with soap and water. If there are vines, this syringing cannot be done so well; but it may be done as much as is practicable. The vines in the green-house require (only it is at a different season perhaps, being earlier in growth) the same stopping and thinning of the fruit, the same care of the wood wanted for next year's bearing, &c. as those out of doors; by reducing the grapes in number you increase them in size, and hasten them in ripening. Cuttings of green-house plants, that have struck, may be potted off in small-sized pots (sixties, or forty-eights), and kept in the house awhile to establish themselves, or in a frame, where the heat of the sun can be kept off awhile, and the glass be shut down for a few days. Something of a shade must be kept on the roof, or part of the roof, inside or out, to prevent the sun from burning up, or weakening, Fuchsias that are flowering in the green-house. The lighter the shade is the better, as a want of light draws up the plants, and weakens them.

THE CONSERVATORY.

The principal duty here is to remove plants past their beauty, and bring in others that are in flower; to trim and train the growing branches of climbing plants, permanently planted out, and growing up the sides, pillars, or trellises. A good succession of Roses, in pots, blooming at all the seasons, will be found very useful; Annuals in pots, and choice plants from the stove and orchideous house. The conservatory should be shaded from the hot sun, or the blooms of flowering plants will soon fade. Weeds will grow rapidly in the borders, and the petals of flowers, and the leaves of plants, fall almost hourly; therefore, early in the morning, all flowering plants of any consequence should be shaken a little, to bring off those blooms which would fall in the course of the day of themselves; and the outer borders, beds, and the soil in pits, be cleared of them; the borders and beds be raked, the paths swept, all the shelves and stands cleaned. It is as necessary for the gardener to clean all the surface of a conservatory, as for the housemaid to sweep and dust the drawing-room. An occasional shower of the dew-like moisture which can be thrown over everything by the patent syringes, will be found beneficial in any long succession of dry weather. Watering must be given plentifully, and especially to plants which are making their growth, such as Camellias, Rhododendrons, and Azaleas planted out; and even more attention must be paid to such as are in large tubs and pots standing in the conservatory. All decaying flowers should be cut off of everything unless seed be wanted, for it prolongs the blooming season of many subjects that bloom in continuance as they grow, and it makes a plant more tidy, even if the bloom is all on at one season. Plants that are removed from the conservatory after blooming must be submitted to the treatment recommended for the department to which they belong. Some, such as bulbs, to have their season of dry and rest; others to be excited and make their growth; for most green-house plants rest when they have set their bloom for the next year, and others when they have done flowering. Pick off all decaying flowers, and their seed-pods with them, before the latter begin to swell, if you are anxious for the growth of the plant: if you want seed, they must remain. Give all the air you can.

THE KITCHEN GARDEN.

This is a busy month. Weeds grow and seed, almost before you think they could come up, and both crops and paths want constant hoeing and clearing. The sticking of Scarlet Beans, and Peas, where there is any deficiency of support, clearing off the crops of Peas that have done bearing, and carefully harvesting the haulm under cover, as the most valuable litter that can be had, and preserving the bean-stalks for earwig-traps, are things of course, and too important to neglect with regard to particular subjects.

Peas may be sown again, because they will be soon up, and grow fast, and if they tell well, they are worth the trouble. The late sorts are generally sown, but the early ones give better chance of a crop; if you continue sowing very late, they are quicker at maturity.

Lettuces may be planted out, and others sown. All kinds of Salad may be kept up the year round, with the protection of a frame in winter, and sowing a little each month through the year; if some fail, others will hit, and rarely two months fail together. Several kinds of Lettuce are pretty hardy.

Potatoes.—This month plant Chapman's kidney; and if you have not got them, get them of some authorized agent; for many have been sold that are no more like them in nature than a York red is like an early frame. They should be planted about the middle or end of the month, and treated like other potatoes; they may be taken up in November, and pitted. They eat like a new Potatoe from Christmas to May, and even June; and quantities are sold during the early months for new Potatoes. Earth up all the crops of Potatoes, to well cover their tubers.

Spinach.—Sow now the winter Spinach, to continue the supply. This will stand the whole winter, and is used by picking off the matured leaves, from time to time, and not by taking the whole plant, as in the round-leaved, or summer kind.

Cauliflowers.—Break down the two or three inner leaves of those which show flower. The object of this is to keep off the sun, that the flower may come white and close. Plant out some of the spring sown, to flower in the autumn; hoe between, and earth up, any that have been planted out in the later spring months. In planting out, wait for showery weather, or give the ground a good soaking all over before you plant, as well as water them in after they are planted.

Onions may be finally thinned out, and must be kept weeded. Some may be sown; although the principal sowing for winter and spring drawing must be next month. Let the ground you sow on be very rich; for it cannot be too much so. Sow the seed rather thickly, tread them well down, and rake them even; when they are sown on a large scale, roll them with a small but heavy roller.

Carrots may also be sown; they will come in for autumn and winter use. The ground should be well dressed, trenched, and laid even, before the sowing; and, as soon as they are fairly up, they should be weeded and thinned.

Cabbage.—Sow Cabbage seed, to use as coleworts. The third or fourth week will be time enough; if they are sown earlier they may run, and disappoint you. Plant out Cabbages where crops are off, and there is room; they are a useful crop, and a succession should always be kept up. Plant out Cabbages also for pickling.

Kidney Beans may be planted still, if they happen to be favourites; a few at the beginning, and a few at the end of the month. Earth up those which are forward.

Broad Beans.—Top those which are coming into flower; it throws the strength of the plant into the fruit, instead of wasting it in further growth. Draw the earth up the stems of the rows which are up, and are advancing.

Herbs.—Gather, if not done last month, dry in the shade, and out of the way of the rain, and too much draft. Herbs, if dried at all, are worth drying properly; and half those that are taken to market, have grown until they have lost the best of their flavour, and dried, till there is hardly any left. Plant Sage, Mint, Savory, &c.; tear down the slips, if you have no seedlings, and make one plant into a good many.

Leeks and **Parsnips**, and even **Turnips**, will transplant to great advantage. The first, as soon as they are large enough to handle; the others, as soon as they have four rough leaves; six inches apart, in rows a foot apart, will do for distance.

Cucumbers.—Those in frames require air and shade during the heat of the day, and regulating the vines to go equally all about the space they have to cover. Those in the open ground only require regulating, and pegging down the shoots, to prevent the wind from blowing them about, and disturbing them. When the shoots of frame Cucumbers get to the extent of the frame, if they are prolific, lift up the frame, and let the vines run outside; if they are not fruiting well, take off the ends.

Turnips.—Sow once or twice this month, after a shower of rain has prepared the ground. Hoe and clean any that are well up, and clear out every weed; leave the Turnips about six inches apart every way.

Celery.—Earth up any that is growing in the trenches, and plant out more in trenches, a foot deep. Put some dung at the bottom, which is to be well forked into the soil within the trench; they may be a foot apart.

Savoys and **Winter Greens** may be planted out in small quantities, and small ones may be pricked out from the seed-beds, to get strength ready for later planting.

Brocoli, Brussels Sprouts, &c., may be pricked out from the seed-bed into nursery-beds, six inches apart, to grow into strength. Seed, also, may be sown for late crops; those large enough to be planted out may be planted out for a principal early crop, choosing, if possible, the period after rains for the operation.

Remove all the remains of crops which are done with, and dig and dress the ground, where it is required. Hoe up the weeds, and stir the earth between all crops. Stick Peas and Scarlet Beans, which are requiring it. Earth up the crops which want it, such as Peas, Beans, Cauliflowers, Cabbages. Clean the paths, and keep clear of weeds everywhere.

FRUIT GARDEN.

Vines.—Go over these to remove all shoots that are not required, and strengthen the remainder. If not done before, stop all the shoots on which there is fruit, one joint beyond the grapes, and tack all the growing and fruiting shoots to the wall. Leave no shoots growing but those intended to bear the next season, and these should be the strongest only.

Wall-fruit Trees.—If you have not completed last month's work, you must lose no time in removing all the weak and useless shoots, and all those which grow outwards from the wall, and tack all the best shoots to the wall. Thin the fruit again, if you have not yet done it effectually. Where there are any shoots that seem more than usually vigorous, remove them, for they will frequently take the whole strength of a tree. None of the branches should be shortened.

Budding should be done this month. Peaches, Nectarines, Apricots, may be budded in Almond stocks; but Plum-stocks, raised from the kernels of the fruit, or from suckers, are the best, and most lasting. Cherries should be budded in Cherry-stocks; and Pears, either upon Pear-stocks, or Quince-stocks; those on Quince-stocks do not grow so tall, and they bear sooner. Plums should be budded on Plum-stocks. Budding should be performed within six inches of the ground. The budding is accomplished by removing, with a short knife, a portion of the bark, with a leaf from the tree you wish to propagate, and by making a cross incision, and raising the bark on each side, tucking in the bark with the leaf on it, which, in fact, contains the bud beneath the bark of the stock, and then fastening it so closely, that the new bark unites with the old stock, and the bud becomes a part and parcel of the tree, the rest of the stock being cut away, and the portion that is left being prevented from growing. Standards are sometimes budded four, five, and six feet from the ground; but many prefer even the trunk, growing from the eye, instead of being formed of the stock.

The destruction of vermin is, at this time, a most important task. Wasps and ants, earwigs, snails, slugs, &c., wage destructive war against early fruit, and, unless well looked after and destroyed, scarcely an undamaged fruit will be obtained. For snails, slugs, and earwigs, there is nothing so effective as watching for them mornings, evenings, and wet days. Wasps and ants must be trapped in wide-mouthed bottles, with a little beer and sugar on the bottom, or say it is one-third filled. By frequently watching these, and clearing them out, thousands may be caught.

THE CULTURE OF HARDY PERENNIALS.

These may be divided into two classes, herbaceous perennials, and shrubby perennials, the former dying down every season, and springing up again, the other maintaining their shrubby form all the year. Among the former may be included all perennial bulbs, and many tuberous-rooted subjects, nearly the whole of which increase of themselves, and among the latter those which are chiefly propagated from cuttings, seeds, layers, slips, &c. The herbaceous perennials may again be divided into bulbous, tuberous, and fibrous. The first may be taken up every year, the second may be left for a time, and occasionally parted, and the last will keep spreading to a great size, but should be always kept within moderate bounds, according to the station they are to fill. The first sort includes nearly all the popular hardy bulbs, Lilies, Crocuses, Tulips, Gladioli, Hyacinths, Narcissi, &c. all of which require nothing but a good border of loam and leaf-mould, to be planted in November, and be taken up when the leaf dies down, or, if it be wished for them to spread more, to be left another season. The tuberous kinds, comprise a large family, the Pæonies, Irises, Aconites, Anemones, Ranunculuses, and such like; and the last, the Phloxes, Lychnises, Pentstemons, Perennial-asters, Lupines, &c. But the roots rather dictate the mode of increase, than affect the apparent nature of the herbaceous perennials. They all shoot up in the spring, perform their offices of flowering, and perhaps seeding, and then die down to the ground. When it is intended to plant a border of herbaceous perennials, some attention must be paid to the height and colour, as well as the season of bloom. Some of them grow a yard or more in height, and they vary from that down to a few inches. All the tallest should be at the back, be their season of bloom when it may, and it is better to have few varieties, well selected, to keep up a diversity of bloom each month, than to aim at a great variety, and involve inconsistency in the plan; for instance, it would be better to see in a long border a dozen plants of the same thing in flower at equal distances, than it would to see one or two, because one or two would give no feature. Suppose, then, we calculate on certain things which in their season make a great show, say the scarlet Lychnis and the white, both occupying an intermediate space between the back and front of the border. Here are scarlet and white. For blue we will say, Campanula pyramidalis, which should be rather more backward, and Delphinium grandiflorum. Some of the Phloxes would also come in among the latter kinds of plants, and diversify the colour. But, among the hundreds of species which come under the head of herbaceous perennials, all that we need say is, consult the catalogues, for colour, height, and season of bloom. Make up your mind that you ought always to have many colours, and especially the three primary ones, in flower at one time, from April to September, or even later, and make out your list so as to afford as many of each kind as you can, without overbearing the border with one thing. Suppose a bed of herbaceous plants to be ten feet wide, or a border to be six, five lines may be drawn along it. The plants in the back division must be the tallest; these, for the most part, will be autumnal in their bloom. Indeed, the very best back would be a row of four feet Dahlias, alternating with a row of six feet Hollyhocks. By a very little management, these may exhibit a wonderful diversity of colour. In front of the Hollyhocks may be some of the tallest Phloxes, Michaelmas Daisies, Golden-rod, Delphinium grandiflorum, the white and orange Lilies, and such like, because they would grow up fast enough to hide the decaying lower blooms of the Hollyhocks, and being all in a line, one sort would not appear too thick, while the Dahlias continuing their bloom pretty nearly half-way down them all the season, would not require anything so tall before them, but anything spreading and trainable, such as the Chimney Campanula, (C. pyramidalis), which could be spread out on stakes, so as not quite to hide the Dahlias; the scarlet and white Lychnises; some of the less tall Phloxes, of a different colour to those before the Hollyhocks, some of the tall perennial Lupines, would all form very proper objects to diversify the flowering. Rather more forward, we might have the Gladioli, in their principal varieties, Pentstemons, Lupinus polyphillus, light blue, dark blue, and white; the Salvias. Forwarder still, we have abundance: the Potentillas, Pæonies, Irises of all sorts, dwarf Phloxes. The dwarf flowering bulbs, even down to the Crocus, may fill up the front. But there is great room for ingenuity and taste in planting one of these borders, because each month ought to show most of the colours, and they should be somewhat evenly distributed over the space. Many persons grow the bulbs in a border by themselves, and confine the herbaceous border, so called, to the plants, which, although comprising some bulbous, do not require to be disturbed every year, but may be left from year to year in the ground to take their chance, and are only attended to by forking over the ground directly they all appear above it, to show where they are; top-dressing it before forking with either leaf-mould, or dung converted into mould by decay, raking smooth, and then tying such as require it to sticks, as they advance, and keeping them proper and tidy until they have done blooming, when the decaying flowers are cut off, the stems at last cut down, and the bed or border, left for the winter, sometimes covered with litter, when great severity of weather is anticipated, but not often. Beds thus kept soon get too full by the rapid spreading of some of the species. These are generally reduced, as soon as they have done flowering, by chopping off pieces all round, which pieces are planted out in other borders to flower; or, in nursery-beds, much smaller pieces, to grow, thus leaving the main plant in the original bed merely reduced to its proper size, and filling up the vacancies occasioned by cutting the roots out with mould, to make all level. If a good border of herbaceous perennials be once planted to your liking, it is more showy, and less troublesome, than any other style of garden. But to do this, we must omit all subjects but those thoroughly hardy. The hardy shrubby perennials are such as do not die down at the end of the season, but retain their shrubby habit, and sometimes their leaves also, in which case they are called evergreen perennials. Most of these are propagated from seed, some, however, have double flowers, and do not bear seed; cuttings of such may be struck under hand-glasses; when struck, they should be planted out into nursery beds to grow into strength before they are placed in their final destination. Some may be propagated from layers, such as the Carnation, for instance, but even that can be raised from cuttings, or as they are technically called, pipings, quite as easily, and with as much certainty in some kinds. Some florists, however, think the colour of the flowers, and the strength of the future plant are affected unfavourably by raising from cuttings instead of layers. The same kind of soil will suit almost all kinds of perennials. The border once made up as we have mentioned for blooming the plants in, all of them may be planted in the autumn, their roots being established, and there they may remain. But many perennials are fancy or show flowers, and are grown in pots, on that account, in preference to the border. These will all be noticed under their separate heads, as, for the purpose of show, they, for the most part, require very different treatment from the ordinary kinds grown in borders. As a general principle, the higher the breed, that is to say, the further removed from the natural state, the more delicate they are in constitution, and, consequently, the more pains must be taken to preserve them in good health.

Perennials from Seed.—When it is determined to raise these from seed, instead of cuttings or layers, the object is to get them up in time to gain sufficient strength by the winter. There are hardy perennials, which will sow their own seed, and grow like weeds; but they are in general so easily propagated by parting their roots, that those only of which new varieties are wanted, are in general sown. However, the seed may be sown at two periods of the year, the one directly it is ripe, the other in the spring. The success of autumn sowing depends on a mild winter; that of spring sowing cannot fail. If you desire to sow in autumn, the seed should be thinly sown in a spot which can be covered with a frame and glass, and then there will not be much difficulty. The merely covering with glass of nights, and not uncovering it while there is a frost, will secure it very well, until it is large enough to plant out in the spring; but there is little got by this, because many kinds will bloom as well after spring sowing, as after autumn. In fact, there is sometimes a a struggle between the plant and the season to bloom just at the close of the year. Spring sowing, then, for us; and if the ground is clear, that is, clear from weeds, and tolerably good, the plant will not fail to thrive. Sow the seed in May, thinly over the surface of the space it is intended to fill as the seed-bed: any open space will do. Rake it in regularly and evenly; or, if there be but few seeds of each, and many sorts, draw with your fingers, or a piece of wood, a drill across the bed, for each sort, and cover very lightly. We have sown this month mixed Antirrhinum, Lupinus polyphillus, mixed Columbine, Delphinium, or perennial branching Larkspur; Lychnis, Digitalis or Foxglove; several kinds of Iris, Polyanthus, Pink, Piccotee, and Carnation, and many others, chiefly for the sake of getting a large quantity, at a cheap rate, for an extensive border, and not so much from any hope of novelty, as we know nothing of our seed. As soon as any are large enough to manage well, they must be planted out six inches apart, in rows a foot from each other. Here they must stand till they have made their year's growth, which will be considerable; and this completed, they may be removed to their places in the beds or borders they are to fill permanently. Most of them, if not all, will bloom the year after sowing, if the sowing is in spring, and some persons, who are rather choice of sorts, will allow them to flower in the bed they are first transplanted in, and only remove the best when the bloom is over. This occupies two seasons instead of one. It is far better to remove all you want for your borders, and then, at or after blooming time, remove only the objectionable ones, and, at the proper season, fill their places with others, which you may have preferred in the bed.

To complete this subject, we add a descriptive list of hardy perennials, in which we have given the colour of bloom, the height of the plant, and the usual month of flowering.

DESCRIPTIVE LIST.

Those marked (*) are the most ornamental and desirable; those marked (†) the most recently introduced.

ACANTHUS MOLLIS, (Smooth Bear's Breech.)—The leaves are large, pinnatifid; the stem erect, with axillary somewhat labiate, purple flowers; height, three feet. Flowers in July.

ACHILLEA CLAVENNÆ, (Silver-leaved Millefoil.)—A tufted, downy plant, with pinnatifid leaves, the lobes two or three times cleft, and subumbellate, dense corymbs of small white composite flowers; height, six inches. Flowers in June.

*ACHILLEA PTARMICA, (Sneezewort.)—This has an erect stem, branched at the top; the leaves are linear lanceolate; the flowers numerous, composite, white; height, two feet. Flowers in August. There is a double-flowered variety, which is very showy.

ACHILLEA MILLEFOLIUM, (Common Millefoil, or Yarrow.)—This has an erect stem, panicled at the top, bearing dense corymbs of small white, composite flowers; the leaves are pinnately divided into narrow multifid segments; height, two feet. Flowers in August. The white or common variety of this plant is pretty; but there is a variety with rose-coloured flowers, which is much handsomer.

ACHILLEA TOMENTOSA, (Downy-leaved Millefoil.)—The leaves are pinnately divided into narrow multifid segments; the stem erect, nearly simple, bearing a many-flowered corymb of small yellow, or orange-coloured composite flowers; height, six inches. Flowers in July.

ACONITUM NAPELLUS, (Common Monkshood.)—These plants have much the appearance of the perennial Larkspur; the leaves are more finely cut or lobed; the flowers of this kind are blue, of a peculiar hood-like construction; height, three to four feet. Flowers in July.

*ACONITUM VARIEGATUM, (Variegated Monkshood.)—Differs chiefly from the last in having white flowers, with the edges of a deep blue, forming a very handsome variegated flower; height, three to four feet. Flowers in July.

AJUGA REPTANS, (Creeping, or Common Bugle.)—A creeping plant; the leaves are ovate, or obovate; the flowers labiate, bluish, in whorled obtuse spikes; height, six inches. Flowers in June.

AJUGA GENEVENSIS, (Geneva Bugle.)—The stem erect; the leaves oblong, elliptic; the flowers labiate, blue, in whorled spikes; height, nine inches. Flowers in June.

ALLIUM SENESCENS, (Narcissus-leaved Garlic.)—Bulbous; the leaves are linear, spirally twisted; the flowers star-like, light purple, in a many-flowered umbel; height, six inches. Flowers in July.

*†ALLIUM CŒRULEUM, (Cœrulean Garlic.)—Bulbous; the leaves are linear, triquetrous; the flowers dense, in globose umbels, small, star-like, bright blue; height, one foot and a half. Flowers in June.

*ALLIUM COWANII, (Cowan's Garlic.)—Bulbous; the leaves linear, lanceolate, much attenuated, and lengthened to a point; the flowers rather large, white, in a many-flowered umbel; height, one foot and a half. Flowers in June.

*ALYSSUM SAXATILE, (Rock Alyssum, or Mad-wort.)—This is almost a suffruticose, or half-shrubby plant. It is evergreen; the leaves are lanceolate; the flowers in dense heads on a low branching stem, small, cruciform, yellow, very ornamental, and forming most excellent beds for spring flowering; height, one foot Flowers in June.

AMMOBIUM ALATUM, (Winged Ammobium.)—This is an "everlasting;" the leaves are oblong; the stem erect, and much branched, bearing white flowers about as broad as a sixpence, and nearly globular; height, two feet. Flowers in July.

ANCHUSA PANICULATA, (Panicled-flowered Bugloss.)—This is a large-growing, erect, hairy plant; the leaves lanceolate; the flowers in conjugate, or twin-panicled racemes, blue, with a white throat; the segments of the flower are roundish; height, four to five feet. Flowers in June. Very showy, but difficult to get out of the ground when once established.

ANEMONE PULSATILLA, (Common Pasque Flower.)—Tuberous-rooted; the root* leaves are divided into many narrow segments; the flowers cup-shaped, violet purple, and downy, somewhat drooping; height, nine inches. Flowers in May.

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* It is necessary to explain, that with many herbaceous plants, the leaves borne near the ground are different from those on the stems, both as to size and shape

*ANEMONE CORONARIA, (Garland Wind-flower.)—Tuberous-rooted; the root leaves are multifid, something like those of Parsley; the flowers cup or poppy-shaped, varying through every shade of purple, violet, lilac, crimson, scarlet, pink, striped, and with flowers both single and double; height, six to nine inches. Flowers in May.

*ANEMONE APENNINA, (Apennine Wind-flower.)—Tuberous-rooted; the root leaves less finely divided than the last; flowers small, pale blue, very pretty; height, six to nine inches. Flowers in April.

ANEMONE NEMOROSA, (Wood Wind-flower.)—Tuberous-rooted; in habit much like the last, but with small white flowers, borne on a stem with the leaves. Flowers in April. There is a variety with double flowers.

ANEMONE VITIFOLIA, (Vine-leaved Wind-flower.)—The root leaves of this plant are broadly palmate, in figure much like those of the grape vine; the flowers are medium-sized, cup-shaped, white, borne on a branching stem distinct from the leaves; height, one foot. Flowers in July.

*ANEMONE STELLATA, (Starry Wind-flower.)—The root leaves are divided, but more coarsely than those of A. coronaria; the flowers are large, rosy purple, with a ring of white around the stamens; height, nine inches. Flowers in May. This is also known as A. hortensis.

ANTENNARIA MARGARATACEA, (Pearly Everlasting.)—An erect plant, with white downy leaves and stems; the leaves linear-lanceolate; the flowers white in a branching corymb; height two feet. Flowers in July.

APOCYNUM ANDROSÆMIFOLIUM, (Androsæmum-leaved Dog's Bane.)—This has an erect forked stem, with ovate globose leaves, and terminal cymes, or loose panicles of small bell-shaped pinkish flowers; height, two feet. Flowers in August.

AQUILEGIA VULGARIS, (Common Columbine.)—The leaves of these plants are compound, that is, cut up or divided into numerous little lobes; the flowers are blue and pendant, formed of numerous quilled petals, with a spur behind, and are borne on a branching stem; height, one foot and a half. Flowers in June. The seedling varieties of this are numerous, differing in their colours; some, too, are double, or quite full of petals.

*AQUILEGIA GLANDULOSA, (Glandulous Columbine.)—The leaves as above; the flowers large, pendant, white and blue, very handsome; height, one foot, or upwards. Flowers in June. The variety called discolor is the handsomest.

*AQUILEGIA CANADENSIS, (Canadian Columbine.)—Smaller than the preceding, but with the same general characters; the flowers are pendant, red and orange, very handsome; height, one foot. Flowers in June. A variety called major is rather larger in every part, and therefore more showy.

*†AQUILEGIA SKINNERII, (Skinner's Columbine.)—A handsome plant in the way of A. canadensis, with large rich scarlet and green flowers; height, one foot. Flowers in May and June.

*†AQUILEGIA GLAUCA, (Glaucous Columbine.)—The stem leafy, slightly branched; the leaves trifid, composed of many segments; the flowers large, drooping, pale yellow, deliciously fragrant; height, one foot and a half. Flowers in June.

ARABIS ROSEA, (Rosy-tinged Arabis.)—The Arabises are pretty dwarf plants, well-suited for rock-work. The leaves of A. rosea are oblong; the flowers, on a little erect stem, are cruciform, whitish, tinged with rose; height, six to nine inches. Flowers in March.

ARABIS ALBIDA, (Whitish Arabis.)—This is a little evergreen herbaceous plant; the lower leaves are ovate, oblong, toothed; the stem leaves somewhat arrow shaped; the flowers in little bunches, white, cruciform; height, six inches. Flowers in May and June.

*ARMERIA VULGARIS, (Common Thrift.)—A dwarf-tufted plant, adapted for edgings to walks, &c.; the leaves are linear, grass-like; the flowers red, in little round heads at the top of the flower-stem; height, six inches. Flowers in June. There is a deep-red flowered variety which is much more showy.

*ARMERIA LATIFOLIA, (Broad-leaved Thrift.)—This is called Armeria cephalotes, and Statice pseudo-Armeria: it is very showy; the leaves are lanceolate; the flowers light red, in large round heads; height, one foot and a half. Flowers in June.

ASCLEPIAS SYRIACA, (Syrian Swallow-wort.)—The leaves are lanceolate-oblong; the flowers in drooping umbels, small, star-shaped, reflexed, pale purple; height, four feet. Flowers in July.

ASCLEPIAS INCARNATA, (Flesh-coloured Swallow-wort.)—The stem is erect, branched; the leaves lanceolate; the flowers in umbels, which are usually two together, red, or reddish-purple; height, two feet. Flowers in July and August.

ASCLEPIAS PULCHRA, (Pretty Swallow-wort.)—A good deal in the way of the last, with red or purple flowers; height, two feet. Flowers in July.

ASCLEPIAS NIVEA, (Snowy-flowered Swallow-wort.)—The leaves ovate-lanceolate; the umbels of flowers erect, terminal; the flowers white; height, three feet. Flowers in August.

*Asclepias tuberosa, (Tuberous-rooted Swallow-wort.)—The stems nearly erect, branching at top; the leaves oblong-lanceolate; the flowers orange-coloured, very showy, the umbels being disposed in terminal subcorymbs; height, one foot and a half. Flowers in August.

Asperula taurina.—(Broad-leaved Woodroof.)—A dwarf plant, with whorls of four elliptic leaves, and axillary umbels of small white tubular flowers; height, six inches. Flowers in June. The Asperulas grow well beneath the shade of trees.

Asperula odorata, (Sweet-scented Woodroof.)—The leaves are in whorls of eight lanceolate segments; the flowers white, in terminal corymbs or bunches, smelling, when dry, very powerfully like new hay; height, four to six inches. Flowers in June.

*Aster Amellus, (Italian Aster.)—The stem erect; the leaves oblong lanceolate; the flowers composite, large, purple; height, one foot and a half. Flowers in August and September.

*Aster pulchellus, (Pretty Aster.)—The stem erect, one flowered; the root leaves spathulate; the flowers purple; height, one foot. Flowers in August.

*Aster novæ-angliæ, (New-England Aster.)—This has lanceolate leaves, and an erect stem, corymbosely branched at the top, bearing large panicles of purple composite flowers; height, five feet. Flowers in September and October.

Aster concolor, (Self-coloured Aster.)—This has oblong lanceolate leaves, and a stem branched at the top, bearing purple composite flowers; height, one foot. Flowers in September and October.

Aster diffusus, (Diffuse-growing Aster.)—The stem leaves lanceolate; the stem compound and branching, with white composite flowers; height, two feet. Flowers in September and October.

Aster puniceus, (Red-stalked Aster.)—This has oblong lanceolate leaves, and branching stem, bearing numerous blue composite flowers; height, six feet. Flowers in September and October.

Astrantia minor, (Smaller Astrantia.)—The root leaves palmately divided into seven or nine segments; the flowers are borne in an umbel; they are small, pinkish, arranged in a sub-globular head, supported by a leafy involucre; height, nine inches. Flowers in June.

Astrantia major, (Larger Astrantia.)—The root leaves palmately divided into five lobes; the flowers produced in heads as in A. minor, but variegated; height, two feet. Flowers in June.

Astrantia intermedia, (Intermediate Astrantia.)—The root leaves palmately divided into five, sometimes three, lobes; the flowers in an umbel, pink; height, one foot. Flowers in July.

Aubrietia purpurea, (Purple-flowered Aubrietia.)—Very pretty rock-plants. The plant forms a dense tuft; the leaves oblong, toothed; the flowers cruciform, light purple, large for the size of the plant; height, four inches. Flowers in April.

Barbarea Præcox, (Early-flowered winter Cress.)—The root leaves are lyre-shaped; the upper ones pinnated; the flowers are small yellow, cruciform, in close heads; habit, branching; height, one foot and a half. Flowers in the winter.

*Betonica grandiflora, (Large-flowered Betony.)—The leaves oval-cordate; the flowers labiate in whorls, purple; height, two feet. Flowers in June.

Betonica incana, (Hoary Betony.)—The leaves oblong; the flowers labiate, pink, in dense spike-formed heads; height, six inches. Flowers in June.

*†Calliprora lutea, (Yellow Calliprora.)—Bulbous. The leaves very long, narrow; the flower yellow, star-like, in an umbel; height, nine inches. Flowers in July.

Caltha palustris, flore-pleno, (Double flowered Marsh Marigold.)—These plants thrive best in damp situations. The leaves are rather large, heart-shaped; the flowers double, yellow, like a double buttercup, on a branching stem; height, one foot and a half. Flowers in April and May.

*Campanula persicifolia, (Peach-leaved Bell-flower.)—This has an erect simple stem; and peach-like, lanceolate root leaves, the stem ones being narrower. The flowers are bell-shaped, short, and broad; blue, nodding; height, three feet. Flowers in July and August. There are several varieties, of which the white-flowered, and the double blue and double white, are very distinct, and very handsome.

Campanula carpatica, (Carpathian Bell-flower.)—The stem is branching; the root leaves roundish, oval, toothed; the flowers solitary, both terminal and axillary; large, light blue, showy; height, nine inches. Flowers in July.

*Campanula grandis, (Grand Bell-flower.)—The stem of this species is erect; the leaves lanceolate; the flowers large, broad, blue, in a spike near the top of the stem; height, two feet. Flowers in July and August. Scarcely hardy.

*Campanula speciosa, (Showy Bell-flower.)—The stem is erect, simple; the leaves linear-lanceolate; the flowers are bell-shaped, deep purple, nodding; height, two feet. Flowers in May and June.

Campanula glomerata, (Headed Bell-flower.)—The root leaves are cordate ovate; the flowers a good deal like the last, violet-coloured; height, two feet. Flowers in May and June.

Campanula Trachelium, (Throatwort Bell-flower.)—The root leaves cordate ovate; the plant generally a good deal like the last. There is a double-flowered variety.

*Campanula pulla, (Russet Bell-flower.) A dwarf plant, with roundish ovate leaves; and little stems, bearing (comparatively) large bluish purple flowers; height, four inches. Flowers in June.

*Campanula alpina, (Alpine Bell-flower.) —A dwarf plant, with small roundish leaves, and (comparatively) large blue, bell-shaped flowers; height, three inches. Flowers in June. There is a white flowered variety.

Cardamine pratensis, (Meadow Cuckoo Pint.) The leaves pinnated; the flowers, on an erect stem, cruciform, light purple; height, one foot or more. Flowers in April. There is a variety called plena, with double flowers.

*Centranthus ruber, (Red-flowered Centranthus, or Red Valerian.)—This plant has an upright branching habit, with ovate lanceolate leaves, and dense corymbose heads of crimson red flowers, which are narrow, and tubular, with a spur at the base, and a regular five-lobed limb; height, two feet. Flowers in June. There is a variety with white flowers.

*Chelone barbata, (Bearded Chelone.) —The root leaves are spathulate; upper ones linear-lanceolate; the flowers tubular, pendulous, scarlet outside, white within, numerous, forming an erect lengthened branching panicle, height, three to four feet. Flowers in July and August.

*†Chelone centranthifolia, (Centranthus-leaved Chelone.)—The root leaves are ovate-lanceolate; the flowers tubular, drooping, in an erect, elongated, branching panicle; scarlet; height four feet. Flowers in August.

Chelone Lyoni, (Lyon's Chelone.)—This is erect, branched; the leaves cordate ovate; the flowers clustered in terminal spikes, purple, inflated; height three feet. Flowers in August.

Chrysostemma tripteris, (Three-leaved Chrysostemma.)—The stem erect, branching; the leaves opposite, three-lobed; the flowers composite, large, yellow, with a purple disk, on three forked panicles; height, five to six feet. Flowers in August.

Circæa lutetiana, (Enchanter's Nightshade.)—This has a branching stem, forming a dense little bush, with nearly oval leaves, and racemose spikes of pretty little pink flowers; height, one foot. Flowers in July.

Colchicum autumnale, (Common Meadow Saffron.)—Much like a Crocus; the flowers are light purple, and come up in the autumn, without the leaves, which grow up in the spring; height, three inches. Flowers in September.

Colchicum variegatum, (Chequered Meadow Saffron.)—In the way of the last, but with chequered, light purple flowers.

Coreopsis lanceolata, (Lance-leaved Coreopsis.)—The leaves are cuneate, or oblong lanceolate; the stem erect, branching; the flowers large, composite, yellow; height, three feet. Flowers in August.

*Coreopsis tenuifolia, (Slender-leaved Coreopsis.)—Dwarfer than the last, with narrow, three-parted leaves, the lobes linear; the stem is branched; the flowers yellow, composite; height, one foot and a half to two feet. Flowers in July.

*Coreopsis grandiflora, (Large-flowered Coreopsis.)—The stem is erect, branched; the leaves are variously parted, with long linear lobes; the flowers are large, yellow, composite; height, three feet. Flowers in August.

Coreopsis senifolia, (Six-leaved Coreopsis.)—The stem erect, branched at top; the leaves opposite, sessile, each three parted, thus forming six lanceolate segments; the flowers composite, large, yellow, with a yellow disk; height, four feet. Flowers in August.

Coronilla minima, (Least Coronilla.)—The stems are decumbent and suffruticose; the leaves pinnated, with obtuse leaflets; the flowers yellow, pea-shaped, in little umbels, or close flat heads, from the axils of the leaves; height, six to nine inches. Flowers in July. A trailing plant; scarcely hardy.

*Corydalis tuberosa, (Tuberous Corydalis.)—The roots tuberous; the leaves twice three cleft; the flowers, with a long spur behind, something like those of the larkspur, purple; they are borne on a stem distinct from the leaves; height, six inches. Flowers in March. There is a white variety, called albiflora.

Corydalis bulbosa, (Bulbous Corydalis.)—The roots are tuberous; the leaves nearly as in the last; the flowers pink, borne as in the last; height, six inches. Flowers in March.

Corydalis sibiricus, (Siberian Corydalis.)—The leaves of this are twice pinnate, that is, the lobes are themselves pinnated; the flowers yellow, borne as in the last; height, six inches. Flowers in July.

Crocus.—Of this well-known family there are numerous species and varieties of almost every shade of yellow, purple, blue, lilac, and white; the greater part flower in the spring, but some in the autumn.

*Crucianella stylosa, (Long-styled Crucianella.)—A procumbent plant, with long trailing stems, beset with whorls of eight or nine lanceolate leaves; and bearing terminal heads of handsome, pink, narrow, tubular flowers, deeply lobed; height, four to six inches. Flowers in July.

*CYCLAMEN REPANDUM, (Repand Cyclamen.)—The root bulbous, the leaves cordate; the flowers red, petals reflexed from near the base; height, three inches. Flowers in April.

CYCLAMEN EUROPÆUM, (Common Cyclamen.)—The leaves orbicular, crenate; the flowers light red, reflexed; height, three inches. Flowers in April.

CYCLAMEN COUM, (Round-leaved Cyclamen.)—The leaves orbicular; the flowers light red, reflexed; height, two inches. Flowers in February and March. The other hardy Cyclamens are equally pretty.

CYNANCHUM VINCETOXICUM, (Vincetoxicum Cynanchum.)—The stem is erect; the leaves ovate; the flowers small, white, star-like, in umbels; height, two feet. Flowers in July and August.

CYNANCHUM ROSEUM, (Rose-flowered Cynanchum.)—The leaves of this are linear lanceolate; the flowers showy, star-like, purple; height, one foot and a half. Flowers in August.

*†CYNOGLOSSUM CŒLESTINUM, (Blue-and-white Hound's-tongue.)—The leaves are cordate ovate; the flowers in forked racemes, the points of the racemes recurved; the flowers small, round, blue edged with white; height, two feet. Flowers in August.

*CYPRIPEDIUM CALCEOLUS, (Common Ladies' Slipper.)—An erect plant, with a leafy stem; the leaves large, oblong, lanceolate, and plaited; the flowers of that character which is peculiar to Orchidaceous plants; in this species there is a large yellow pouch, and some brown-coloured narrow sepals and petals; height, one foot. Flowers in May and June.

*CYPRIPEDIUM SPECTABILE, (Showy Ladies' Slipper.)—This is a stouter plant than the last, with pale coloured flowers, and a broader pouch; height, one foot. Flowers in June.

*CYPRIPEDIUM HUMILE, (Dwarf Ladies' Slipper.)—A dwarfer and smaller plant; the flowers are white and red; height, six inches. Flowers in May.

*DELPHINIUM CHEILANTHUM, (Doroninsk Larkspur.)—The Larkspurs are among the most showy of the larger herbaceous plants, their tall stems towering up like spires; the leaves are divided into narrow lobes; the flowers, with a spur behind, dark blue; height, three feet. Flowers in May.

*DELPHINIUM BARLOWII, (Barlow's Larkspur.)—A dwarfer English hybrid, with beautiful dark lapis-blue double flowers; height, two feet and a half. Flowers in August. This is the D. cheilanthum multiplex.

*DELPHINIUM GRANDIFLORUM FLORE-PLENO, (Double Large-flowered Larkspur.)—This is truly beautiful. The leaves as before; the flowers double, of a very bright, dazzling lapis blue, of intense brilliancy; height, two and a half to three feet. Flowers in July.

*DELPHINIUM AZUREUM, (Azure-flowered Larkspur.)—The leaves are divided into narrow lobes; the flowers of a light azure blue, with black stamens in the centre; height, three feet. Flowers in July.

DIANTHUS BARBATUS, (The Sweet William.)—These are well-known, and universally admired fragrant flowers. The plants raised from seed produce an almost endless variety; the most distinct colours are the deep crimson, the scarlet, the purple, the rose-coloured, and the white banded.

*DIANTHUS BARBATUS, VAR.—There is a very beautiful hybrid, called the Mule Pink, supposed to have been raised between this plant and the Clove or Carnation; but, like many of the common plants, its origin is obscure. The leaves have an intermediate appearance between those of a Carnation and Sweet William; the flowers numerous, double, rosy purple, on a branching upright stem, very fragrant; height, one foot. Flowers in June and July.

*DIANTHUS DELTOIDES, (Maiden Dianthus, orPink.)—The stem is decumbent, and branching; the leaves small, upper ones narrow and acute, lower ones obtuse and oblong; the flowers small, very pretty, light rose-colour, with darker marks, in shape like a single Pink; height, six inches. Flowers in June. There is a white variety.

DIANTHUS CÆSIUS, (Mountain Dianthus, or Pink.)—The leaves are glaucous, linear, and obtuse; the flowers flesh-coloured; height, six inches; Flowers in July.

*DIANTHUS CAUCASICUS, (Caucasican Pink.)—The leaves narrow, and glaucous; the flower stem with few branches; flowers purple; height, one foot. Flowers in July.

DIANTHUS SUPERBUS, (Superb Pink.)—This plant has a much branched spreading stem, bearing numerous, fringed, light purple flowers; the leaves narrow; height, one foot and a half. Flowers in July and August.

*DIANTHUS FERRUGINEUS, (Yellow Pink.)—The leaves are linear; the flowers large, yellow, with notched petals, aggregated at the top of the slightly-branching stem; height, one foot and a half. Flowers in July and August.

*DIANTHUS ARMERIA, (Deptford Pink.)—The leaves are subulate; the flowers in loose heads, red, with a dark band; height, one foot. Flowers in July. There is a white variety.

*DICLYTRA FORMOSA, (Handsome Diclytra.)—The leaves of this plant are multifid, that is, cut up into many lobes; the flowers are borne on one side of a stem, distinct from the leaves; they are drooping, somewhat flask-shaped, flesh-colour, or light rosy lilac; height, six to nine inches. Flowers in June.

Dictamnus Fraxinella, (Common Fraxinella.)—An upright-growing plant, with coarse pinnated leaves, and rather numerous flowers in a raceme at the top of the stem, composed of long narrowish straggling petals; colour, purple; height, three feet. Flowers in June. There is a variety with white flowers.

*Digitalis purpurea, (Purple Foxglove.)—This has a tuft of large oblong leaves, from whence rises an erect tapering stem, one side of which, for some length, is covered with large, drooping, funnel or pouch-like flowers, which are purple, with numerous spots in the inside; height, three to five feet. Flowers in July. The colour of the flowers varies from dark purple to cream and white.

Digitalis ferruginea, (Iron-coloured flowered Foxglove.)—The habit is similar to the last; the leaves oblong; the flowers rusty-brown; height, three to five feet. Flowers in July.

*Dodecatheon Meadia, (Mead's American Cowslip.)—The leaves tufted, oblong elliptic; the flowers are light purple, with the segments reflexed from near the base, drooping, borne in an umbel; height, one foot. Flowers in April and May.

Dodecatheon integrifolia, (Entire-leaved American Cowslip.)—The leaves oblong entire. A good deal like the last.

Doronicum pardalianches, (Great Doronicum.)—The root leaves cordate, dentate; the flowers large yellow, composite; height, one foot. Flowers in May and June.

Doronicum plantagineum, (Plantain-leaved Doronicum.)—The root leaves of this are ovate; the flowers are large, yellow, composite; height, one foot. Flowers in May and June.

Dracocephalum grandiflorum, (Large-flowered Dragon's head.)—The stems erect; the leaves oblong, obtuse; the flowers tubular, labiate, blue, disposed in oblong spikes; height, nine inches. Flowers in August.

Dracocephalum speciosum, (Showy Dragon's Head.)—The stem erect; the leaves broadly heart shaped; the flowers purple, in sub-secund whorls; height, one foot and a half. Flowers in August.

Echinops sphærocephalus, (Great Globe Thistle.)—The leaves are large, pinnatifid, broad; the stem branching, bearing at the ends of the branches globular hedgehog-like, light blue heads of flowers; height, three to four feet. Flowers in July.

Echinops spinosus, (Thorny-headed Globe Thistle.)—The leaves are pinnatifid, with a habit much like the last, bearing heads of white flowers with long spines; height, three feet. Flowers in August.

*Echinops paniculatus, (Panicled Globe Thistle.)—The leaves of this are large, pinnatifid; the stem much branched, bearing globose heads of blue flowers; height, five feet. Flowers in July.

Epilobium rosmarinifolium, (Rosemary-leaved Willow Herb.)—This plant has linear or narrow leaves, on an erect branched stem; the flowers are round, of four petals, of a purple colour; height, two feet. Flowers at the point of a long, narrow, four-angled seed-pod, in July. A variety with white flowers is called album.

*Epilobium Dodonæi, (Dodone's Willow Herb.)—This has narrow leaves, and large purplish rose flowers, on an erect, scarcely branched stem; height, one foot and a half. Flowers in July.

Epilobium angustifolium, (Narrow-leaved Willow Herb.)—This has an erect branched stem; the leaves linear-lanceolate; the flowers in a terminal raceme, purple, height, four feet. Flowers in July.

Epimedium alpinum, (Alpine Barren Wort.)—The stems of these plants are ternate, or three-forked, with heart-shaped, pointed leaves, and little clusters of yellow and red, four-petalled, pointed flowers; height, nine inches. Flowers in May.

* Epimedium grandiflorum, (Large-flowered Barren Wort.)—The leaves are tri-ternate; the flowers are large, light purple, and showy; height, one foot. Flowers in April.

*Epimedium violaceum, (Violet-coloured Barren Wort.)—The leaves are tri-ternate; the flowers of this species are white and violet-coloured; height, one foot. Flowers in April. This and the last are both handsome plants.

Eranthis hyemalis, (Winter Aconite.)—A little tuberous-rooted plant, flowering so early as to be often seen peeping out from amongst the snow. It comes up with a single round leaf, deeply notched or lobed, on the top of which, in the centre, is the little yellow cup-like flower; height, three inches. Flowers in February. Flowers well in pots, through the winter.

Erigeron glabellum, (Glabrous-leaved Erigeron.)—The stem erect; the lower leaves ovate oblong, the upper ones lanceolate; the stem with three to five pale blue composite flowers at the top, in a corymb; height, one foot. Flowers in August.

Erigeron purpureum, (Purple Erigeron.)—The stem is erect, with oblong leaves, and small corymbs of purple composite flowers; height, one foot. Flowers in August.

*Erigeron humile, (Dwarf Erigeron.)—

The root leaves spathulate, the stem ones linear lanceolate; the flowers pale flesh-coloured, or white; height, one foot. Flowers in August.

*ERIGERON SPECIOSUM, (Showy Erigeron.)—The stem erect, branching; the lower leaves spathulate, the upper ones acuminate; the flowers purplish blue or violet-coloured; height, two feet and a half. Flowers in July.

*ERYNGIUM BOURGATI, (Cut-leaved Eryngium.)—The root-leaves are orbicular, three-parted, the lobes pinnatifid; the stem simple, only partially branched at the top; the involucre (a circle of leaf-like bracts) is composed of from ten to twelve lanceolate, sharp-pointed leaflets, beneath the ovate head of spiny-looking blossoms, which is pale blue; height, two feet. Flowers in July.

*ERYNGIUM ALPINUM, (Alpine Eryngium.) The root leaves are cordate, the upper ones palmate; the stem is erect, slightly branching, and bearing oblong heads of blue spiny-looking flowers, beneath which is the involucre, composed of from ten to twenty leaflets; height, one foot and a half. Flowers in July.

ERYNGIUM PLANUM, (Plane-leaved Eryngium.)—The root leaves are oblong, cordate; the upper ones five-parted; the stem is erect, corymbosely branched at the top; the spiny-heads of flowers are light blue, above an involucrum of from six to seven lanceolate leaflets; height, three feet. Flowers in July.

*ERYTHRONIUM DENS-CANIS, (Common Dog's-tooth Violet.)—The leaves oval, pointed, spotted with brown; the flowers purple; segments reflexed from the base; height, three inches. Flowers in April. There is a white variety.

ERYTHRONIUM AMERICANUM, (American Dog's-tooth Violet.)—The leaves lanceolate; the flowers larger than the last, segments partially reflexed, yellow; height, three inches. Flowers in April.

*†ERYTHRONIUM GRANDIFLORUM, (Large-flowered Dog's-tooth Violet.)—The leaves oblong lanceolate; the flowers large yellow, segments reflexed from near the base; height, six inches. Flowers in May.

*EUPHORBIA CYPARISSIAS, (Cypress Spurge.)—This is an erect plant, with narrow lanceolate leaves, and bearing a many-forked umbel of numerous pretty greenish-yellow bracts (not flowers, the flowers being quite inconspicuous); height, one foot and a half. Flowers in June.

EUPHORBIA AMYGDALOIDES, (Almond-leaved Spurge.)—This has obtuse oval leaves, and a many-forked umbel of greenish bracts; height, two feet. Flowers in April and May. There is a variety with variegated leaves, which is very ornamental.

*FRITTILARIA IMPERIALIS, (Crown Imperial.)—This has a bulbous root, lanceolate leaves, and an upright stem, with a tuft of drooping flowers, surmounted by a crown of green leaves: there are varieties with yellow flowers, and several shades of red and orange; height, three feet. Flowers in April.

FRITTILARIA LUTEA, (Yellow-flowered Frittilary.)—Bulbous; the leaves linear lanceolate; the flowers yellow, drooping, bell-shaped, solitary, at the top of the stem; height, one foot. Flowers in April.

*FRITTILARIA PYRENAICA, (Pyrenean Frittilary.)—Bulbous; the leaves are linear; the flowers are axillary, dark purple; height, one foot and a half. Flowers in June.

FRITTILARIA MELEAGRIS, (Chequered Frittilary.)—Bulbous; the leaves are linear; the stem erect, bearing one drooping, purple, chequered flower; height, one foot. Flowers in April and May.

*FRITTILARIA PRÆCOX, (Early Frittilary.)—This has been considered a variety of the last; it has white flowers. Flowers in April and May.

*FUNKIA JAPONICA, (Japan Funkia.)—The leaves are subcordate, acuminate; the flowers in a loose spike, white, funnel-shaped; height, one foot. Flowers in August.

FUNKIA OVATA, (Ovate-leaved Funkia.)—This has ovate acuminate leaves; the flowers are blue; height, one foot and a half. Flowers in May.

*†FUNKIA SIEBOLDTIANA, (Sieboldt's Funkia.)—The leaves large, ovate acuminate; the flowers lilac, funnel-shaped, drooping, on an erect stem; height, one foot. Flowers in June.

*†FUNKIA ALBO-MARGINATA, (White-margined-leaved Funkia.)—The leaves are ovate lanceolate, edged with white; the flowers lilac; height, one foot and a half. Flowers in July.

GAILLARDIA ARISTATA, (Bearded Gaillardia.)—This has tufted ovate leaves, and an erect branched flower stem, bearing large deep yellow flowers, with a brownish purple disk or centre; height, one foot and a half. Flowers in August.

*GAILLARDIA BICOLOR, (Two-coloured Gaillardia.)—A good deal like the last; but the flowers are yellow, with an orange-coloured centre, and a portion of the petals (or ligulæ) next the base, also orange-coloured; both are very showy plants; height, one foot and a half. Flowers in August.

GALANTHUS NIVALIS, (Common Snowdrop.)—Bulbous; this has narrow leaves, and drooping, white, well-known flowers. Flowers in February and March.

GALANTHUS PLICATUS, (Plaited Snowdrop.)—Bulbous; this has broad obtuse leaves, and white flowers, much like the last; height, six inches. Flowers in February and March.

*Galatella linifolia, (Flax-leaved Galatella.)—This has linear leaves and an erect stem, corymbose at the top; the flowers are composite, white; height, one foot and a half. Flowers in July.

*Galatella cava, (Hoary Galatella.)—This has lanceolate oblong leaves, and an erect, corymbosely branched stem; the flowers are composite, light purple or lilac; height, one foot and a half. Flowers in August.

*Gentiana verna, (Spring-flowered Gentian.)—A dwarf tufted plant, with ovate leaves, and large erect, salver-shaped, deep azure blue flowers; height, three inches. Flowers in April and May. There is a white-flowered variety. This is called Ericala verna.

*Gentiana acaulis, (Stemless Gentian.)—A dwarf tufted plant, with very large, long, bell-shaped, deep blue flowers, and ovate leaves; height, three inches. Flowers in April and May. This is called Pneumonanthe acaulis.

*Gentiana Pneumonanthe, (Calathian Violet.)—This has an erect stem, and linear, spathulate leaves; the flowers are clustered, funnel-shaped, deep blue; height, nine inches. Flowers in August. This is called Pneumonanthe vulgaris.

*Gentiana septemfida, (Seven-cleft-flowered Gentian.)—This has an erect stem; the leaves lanceolate; flowers clustered, funnel-shaped, light blue; height, one foot. Flowers in July. Called Pneumonanthe septemfida.

*Gentiana saponaria, (Soapwort-like Gentian.)—The leaves are oblong, lanceolate; the flowers are clustered, bell-shaped, ventricose, fine blue; height, one foot and a half. Flowers in August and September. This is called Pneumonanthe saponaria.

*Gentiana asclepiadea, (Asclepias-like Gentian.)—An erect plant, with ovate, lanceolate leaves, and numerous campanulate, deep blue, flowers, at the top of the stem; height, one foot. Flowers in July. There is a white variety. This plant is called Coilantha asclepiadea.

*Geranium sanguineum, (Red-flowered Crane's Bill.)—The leaves are rounded, five-lobed; the flowers numerous, on a branching, diffuse stem, buttercup-shaped, blood-red colour; height, one foot. Flowers in July.

*Geranium Ibericum, (Iberian Crane's Bill.)—The leaves rounded, five to seven-lobed; the flowers large, purplish blue, on a slightly branched stem; height, one foot and a half. Flowers in July.

Geranium striatum, (Streaked-flowered Crane's Bill.)—The leaves rounded, five-lobed; the flowers flesh-coloured, with veiny stripes or lines of darker colour; height, one foot. Flowers in August.

Geranium phæum, (Dusky Crane's Bill.)—The leaves rounded, five-lobed; the stem erect, branching, bearing small, nearly black flowers, with the petals reflexed; height, one foot or upwards. Flowers in May.

*Geum coccineum, (Scarlet Geum.)—The root leaves tufted, lyre-shaped, lobed; the flowers rosaceous, (in shape like a single rose,) on an erect, branching stem, scarlet; height, one foot and a half. Flowers in July.

Geum montanum, (Mountain Geum.)—Also called Sieversia montana. The root leaves tufted, pinnatifid lyrate; the flower-stem erect, bearing one large, yellow, showy, rosaceous flower; height, six to nine inches. Flowers in July.

*Gymnadenia conopsea, (Fragrant Gymnadenia.)—Bulbous; the leaves lanceolate; the flowers (orchidaceous) purple, on an erect, dense spike; height, one foot. Flowers in June and July.

*Hedysarum coronarium, (French Honeysuckle.)—An upright plant, with a branching stem, and large pinnate leaves, with roundish, elliptic leaflets; the flowers crimson, pea-shaped, in close spikes at the end of long stalks, proceeding from the axils; height, three feet. Flowers in June. It is scarcely more than a biennial.

Hedysarum album, (White Hedysarum.)—The leaves pinnate, with linear leaflets; the flowers white, pea-shaped; height one foot. Flowers in July.

Hedysarum grandiflorum, (Large-flowered Hedysarum.)—The leaves pinnate, with elliptic leaflets; the flowers pea-shaped, purple; height, one foot and a half. Flowers in July.

Hedysarum roseum, (Rosy Hedysarum.)—The leaves numerously pinnated, with elliptic leaflets; the flowers rose-coloured, pea-shaped, in oblong axillary spikes, on an erect stem; height, six inches. Flowers in August.

*Helleborus niger, (Christmas Rose.)—The root-leaves are fingered, and from among them the large white spreading flowers rise, about six inches high, in the dead of winter; if the plants are established, and the situation at all sheltered, they bloom in profusion, and are extremely beautiful at that season.

Helianthus multiflorus, (Many flowered Sunflower.)—The stem is erect, branching; the leaves large, cordately ovate; the flowers are numerous, large, composite, yellow; height, three feet. Flowers in September. There is a double-flowered variety, which is very showy.

*Helychrysum arenarium, (Sand Everlasting.)—A dwarf-plant, entirely covered with a whitish down; the lower leaves ovate oblong; the upper ones linear; the flowers small, nearly globular, yellow, "everlasting," in a densely corymbose head; height, six inches. Flowers in August.

*Hepatica triloba, (Three-lobed-leaved Liverwort.)—The leaves bluntly three-lobed and numerous, forming a dense tuft; flowers numerous, small, buttercup shaped, pink; height, four to six inches. Flowers in April. There are varieties with blue and white flowers, and also with double flowers of each colour: the double-pink and double-blue are very pretty when grown in pots, and gently forced in the early part of the spring.

*Hesperis matronalis, (The Garden Rocket.)—The Rockets are very showy plants; the leaves large ovate-lanceolate, toothed; the flowers on an erect stem, cruciform, light purple; height, about two feet. Flowers in June. The double-white, double French white, and double-purple varieties of this plant, are splendid objects.

Heuchera americana, (American Heuchera.)—The root-leaves roundish, lobed; the flowers small, on a branching panicle, purplish; height, two feet. Flowers in May.

Horminum pyrenaicum, (Pyrenean Horminum.)—The root-leaves ovate obtuse; the stems erect, simple, furnished with whorls of drooping bluish-purple labiate flowers; height, one foot. Flowers in July.

*Hyacinthus amethystinus, (Amethyst-coloured Hyacinth.)—Bulbous. This has long narrow leaves, and a spike of bell-shaped, blue, drooping flowers; height, nine inches. Flowers in May.

Hypericum quadrangulum, (Square-stemmed St. John's Wort.)—The leaves are small, bluntly ovate; the flowers in a many-coloured panicle at the top of the upright stems, small, yellow; height, one foot and a-half. Flowers in July.

*Hypericum montanum, (Mountain St. John's Wort.)—The stems round, and erect; the leaves bluntly ovate, small; the flowers much like the last; height, one foot. Flowers in July.

Iris susiana, (Chalcedonian Iris.)—The flowers of the Iris family consist of six segments, of which three are erect, and occupy the centre, and the three alternate ones are deflexed. The leaves of this, are sword-shaped; the stem erect, bearing one striped flower; height, two feet. Flowers in April.

*Iris germanica, (German Iris.)—The leaves sword-shaped; the flowers large, purple, blue, numerous; height, three feet. Flowers in May.

*Iris pallida, (Pale Turkey Iris.)—The leaves sword-shaped; the flowers large, pale blue, numerous; height, two feet. Flowers in May.

*Iris subbiflora, (Double-bearing Iris.)—The leaves sword-shaped; the flowers deep purple or violet, large; height, nine inches to one foot. Flowers in May and June.

Iris tenax, (Tough Iris.)—The leaves linear, sword-like; the flowers purple; height, one foot. Flowers in July.

*Iris fragrans, (Fragrant Iris.)—The leaves of this are sword-shaped, narrow; the stems about three-flowered; the flowers small, light blue, fragrant; height, one foot and a-half. Flowers in June.

Iris pseud-acorus, (Yellow Water Iris.)—The leaves sword-shaped; the flowers yellow; height, three feet. Flowers in June. Grows in wet places.

Iris ochroleuca, (Sulphur-coloured Iris.)—The leaves linear, sword-leaved; the stems about three-flowered; the flowers light yellow; height, three feet. Flowers in July.

*Iris lusitanica, (Portuguese Iris.)—The leaves narrow, channelled; the stems two-flowered; the flowers large, blue; height, two feet. Flowers in May.

Iris furcata, (Forked Iris.)—The leaves sword-shaped; the stems forked, two-flowered; the flowers large, blue. Flowers in April.

Iris Xiphium, (Small Bulbous Iris.)—Bulbous; the leaves are awl-shaped, channelled; the stems two-flowered; the flowers blue and yellow, petals narrow; height, one foot and a-half. Flowers in June.

*Iris xiphioides, (Great Bulbous Iris.)—Bulbous. The leaves awl-shaped, channelled; the stems two-flowered; the flowers blue and yellow, petals broad; height, one foot and a-half. Flowers in June. These two last species have given rise to a great variety of florists' hybrids of various colours, and of great beauty.

Jasione perennis, (Perennial Jasione.)—The stem is erect; the leaves obovate, the upper ones oblong linear; the flowers in globular heads, blue, very showy; height, one foot. Flowers in July.

Lathyrus grandiflorus, (Large-flowered Pea.)—A branching climbing plant; leaves composed of three oval leaflets; the flowers two or three together, large, purple rose, pea-shaped, very showy; height, four feet. Flowers in July.

*Leucojum vernum, (Spring Snow-flake.)—Bulbous. The leaves short, linear; the flowers one on a stem, white, like a Snowdrop; height nine inches. Flowers in February and March.

*Leucojum æstivum, (Summer Snow-flake.)—Bulbous. The leaves linear, long; the flowers several on a stem, white; height one foot and a half. Flowers in May.

*Leucojum autumnale, (Autumn Snow-flake.)—Bulbous. The leaves narrow; the stem many-flowered, the flowers pink; height nine inches. Flowers in September.

Liatris spicata, (Spike-flowered Liatris.)—The root is tuberous; the leaves are linear, and glabrous, and the flowers, of a rosy purple, are produced in spikes, and have a pretty appearance; height six feet. Flowers in September.

Liatris Pumila, (Dwarf Liatris.)—This is by some considered to be a variety of the last, with a more dense, and shorter spike of flowers; height one foot. Flowers in September.

*Linaria dalmatica, (Dalmatian Toad-flax.)—An erect plant, with numerous oblong lanceolate leaves; the flowers yellow, gaping, in loose, few-flowered terminal racemes; height three feet. Flowers in June.

Linaria genistæfolia, (Broom-leaved Toad-flax)—The stem branched, with lanceolate acute leaves; the flowers gaping, pale yellow, in loose racemes; height three feet. Flowers in July.

Linaria Purpurea, (Purple-flowered Toad-flax.)—The stem erect, branched; the leaves linear, the flowers gaping, purplish blue, in loose racemes; height three feet. Flowers in July.

*Linum montanum, (Mountain Flax.)—A pretty plant; the leaves linear; the flowers composed of five obtuse petals, blue, in a corymbose, or branching panicle, on erect stems; height one foot and a half. Flowers in June.

*†Linum monogynum, (One-styled Flax.)—The stem is erect; the leaves lanceolate; the flowers in corymbs, large, white; height two feet. Flowers in June.

Lithospermum purpureo-cœruleum, (Purplish blue-flowered Gromwell.)—The flower-stems erect, with lanceolate acute leaves; the flowers funnel-shaped, in short twin racemes, at first red, afterwards purple; height, one foot. Flowers in May. There is a white variety.

Lobelia syphilitica, (Blue Cardinal Lobelia.)—An erect plant, with ovate leaves, and terminal racemose spikes of gaping blue flowers; height, two feet. Flowers in September.

*Lobelia splendens, (Splendid Lobelia.)—An upright grower, with lanceolate denticulate leaves, and terminal racemose spikes of gaping scarlet flowers, with a three-lobed lower lip; height, three feet. Flowers in July.

*Lobelia fulgens, (Fulgent Lobelia.)—The leaves of this are lanceolate acuminate; the flowers gaping, with a three-lobed lower lip, brilliant scarlet; height, three feet. Flowers in July.

Lobelia cardinalis, has scarlet flowers.

*Lobelia Millerii.—A variety of cardinalis, has violet purple flowers; besides these, there are numerous hybrids of various tints of colour, all very showy.

Lupinus perennis, (Perennial Lupine.)—A diffuse-branching plant, with digitate leaves, the leaflets of which are oblong; the flowers are in small spikes, pea-shaped, bluish-purple; height, two feet. Flowers in June.

*Lupinus polyphyllus, (Many leafletted Lupine.)—This plant has an erect, unbranched stem, with a tapering spike of flowers, from six inches to a foot long, densely bloomed; the leaves are digitate, with many oblong leaflets; the flowers blue, pea-shaped; height, two feet. Flowers in June. There is a very distinct and desirable variety with white flowers, called alba.

*Lupinus grandifolius, (Large-leaved Lupine.)—A good deal like L. polyphyllus, but with larger brownish-looking leaves, and darker purple flowers; in other respects similar: both are very showy.

Lupinus littoralis (Sea-shore Lupine.)—A dwarf decumbent, or trailing species, with digitate leaves, and short spikes of blue and pink pea-shaped flowers; height, nine inches to one foot. Flowers in July.

*Lupinus rivularis, (Water-side Lupine.)—A species with decumbent or trailing stems; the leaves digitate; the flowers white and pink, pea-shaped, in short spikes; height, one foot. Flowers in May and June.

*Lythrum salicaria, (Common Lythrum.)—A tall upright plant, frequent by the river sides of this country, but scarcely yielding to any in beauty. The leaves are long, narrowish, or willow-like; and the flowers are produced in a dense long spike at the top of the stems, rosy purple; height, three feet. Flowers in July and August.

*Lychnis Chalcedonica, (Scarlet Lychnis.)—The leaves of this plant are lanceolate cordate, and both them and the stem are hairy; the flowers are large, round, composed of five flat petals, scarlet, produced in an aggregated bunch at the top of the upright stems; height, two feet. Flowers in June. There is a white variety, and a double white, and double scarlet; the latter is very ornamental.

*Lychnis fulgens, (Splendid Lychnis.)—The foliage of this species is ovate and hairy; the stem erect and hairy; the flowers large, brilliant scarlet, in bunches of two or three together, at the top of the stem; height, one foot and a half. Flowers in June.

Malva moschatus, (Musk-scented Mallow.)—The lower leaves kidney-shaped, incised; the upper ones more deeply cut into many linear segments; the flowers large, flesh-coloured; height, two feet. Flowers in June and July. There is a white variety.

*Melissa grandiflora, (Large-flowered Balm.)—The branches are somewhat erect; the leaves ovate, acute; the flowers large, purplish, in loose, pea-flowered, sub-secund, whorled racemes; height, one foot. Flowers in July.

Melittis melissophyllum, (Common Bastard Balm.)—The stems erect, simple; the leaves ovate; the flowers whorled, axillary, reddish; height, one foot. Flowers in June. The variety called grandiflora has cream-coloured flowers, with the middle of the lower lip violaceous.

*Mertensia pulmonarioides, (Lungwort-like Mertensia.)—The stems erect; the leaves glaucous, obovate, elliptic; the flowers in corymbose racemes, funnel-shaped, beautiful blue; height, one foot and a half. Flowers in May. This is called Pulmonaria Virginica, and Lithospermum pulchrum.

*Mimulus ringens, (Gaping-flowered Monkey Flower.)—The stem erect; the leaves oblong, clasping the stem; the flowers axillary, gaping, light blue, or violaceous; height, one foot and a half. Flowers in July.

Mimulus alatus, (Wing-stemmed Monkey Flower.)—The stem erect, four-winged, from the decurrence of the leaves; the leaves oblong elliptic; the flowers axillary, gaping, light-purplish blue; height, one foot. Flowers in July.

*Mimulus cardinalis, (Cardinal Monkey Flower.)—The stem erect, branched; the leaves ovate, stem-clasping; flowers axillary, scarlet, with the lobes reflexed; height, two feet. Flowers in July.

Mimulus roseus, (Rose-coloured Monkey Flower.)—A small plant, with erect stems and oblong leaves; the flowers are dull rose-coloured, gaping, axillary; height, one foot. Flowers in July. Between this and the last, numerous hybrids have been raised of a very showy character.

*Mimulus guttatus, (Spotted Monkey Flower.)—This has an erect stem, and ovate, cordate, stem-clasping leaves; the flowers are large, gaping, axillary, yellow, spotted with rich brown in the mouth; height, one foot and a half. Flowers in June. Between this and M. luteus, numerous hybrids have been raised with yellow flowers, and large even spots on each of the five lobes of the flowers.

*Monarda didyma, (Oswega Tea.)—The stem is erect; the leaves ovate lanceolate; the flowers collected into dense whorls, labiate, scarlet; height, two feet. Flowers in July. The leaves emit a very pleasant odour.

*†Morina longifolia, (Long-leaved Morina.)—This has an erect stem; the leaves are broad, very long, sinuate, and furnished with spiny teeth along the edges; the flowers are tubular and gaping, pink, collected into aggregated whorls in the axils of small leaf-like bracts, along the erect stem; height, three feet. Flowers in August and September.

Muscari moschatum. (Musk Grape-Hyacinth.)—Bulbous; the leaves linear, the flowers ovate, blue, in a dense spike; height, three inches. Flowers in May.

Muscari racemosum, (Starch Grape-Hyacinth.)—Bulbous; the leaves linear, recurved; the flowers blue, much like the last; height, three inches. Flowers in April.

Myosotis cæspitosa, (Tufted Mouse-ear.)—A tufted plant, with lanceolate leaves, and revolute terminal racemes of pretty small blue flowers, with a yellow throat; height, nine inches. Flowers in July.

*Myosotis palustris, (Marsh Mouse-ear, or Forget-me-not.)—An upright-growing plant, with obovate lanceolate leaves, and revolute terminal racemes of small blue flowers, with a yellow throat; height, varying from six inches to one foot. Flowers in May. A beautiful flowered marsh plant.

*Narcissus poeticus, (Poet's Narcis.)—Bulbous; the leaves erect, narrow; the flowers with six broad spreading white petals, and a small flat orange cup in the centre; height, one foot. Flowers in May.

*Narcissus Trewianus, (Bazelman Major Narcis.)—Bulbous; the leaves erect, narrow; the flowers in a cluster, white, with yellow cup; height, one foot and a half. Flowers in April.

*Narcissus Jonquilla, (Jonquil.)—Bulbous; the leaves erect, narrow; the flowers two or three together, yellow; height, nine inches. Flowers in May.

*Narcissus Bulbocodium, (Hoop-petticoat Narcis.)—Bulbous; the leaves short, narrow, erect; the flowers yellow, with a large projecting, almost funnel-shaped cup, whence the name; height, four inches. Flowers in April.

* Narcissus ajax, (Great Narcis.)—Bulbous; the leaves narrow, erect; the flowers large, drooping, with a large projecting funnel-like cup; height, one foot. Flowers in April. There are upwards of fifty kinds of Narcissus, all very showy bulbs.

Nardosmia fragrans, (Sweet-scented Nardosmia.)—This is the fragrant Coltsfoot; the leaves are large, cordate, produced after the flowers; the flowers are small, thread-like, in dense heads or spikes, French white; height, six inches. Flowers in February. It is very agreeably scented.

†Nuttallia cordata, (Heart-leaved Nuttallia.)—The root leaves cordate, lobed; the stem branched; the flowers flesh-coloured, mallow-shaped, in loose racemes; height one foot and a half. Flowers in August.

*Nuttallia grandiflora, (Large-flowered Nuttallia.)—The leaves pedate, digitate; the flowers mallow-shaped, purplish crimson, on a branched stem; height two feet. Flowers in July.

†NUTTALLIA MALVÆFLORA, (Mallow-flowered Nuttallia.)—The root leaves many parted, with obtuse lobes; the stem leaves with linear lobes; the stem branched; the flowers in close terminal spikes; small, light rose-coloured; height two feet. Flowers in August.

ŒNOTHERA GLAUCA, (Glaucous-leaved Œnothera.)—The leaves tufted, broadly ovate; the flowers large, yellow, composed of four obcordate petals; height one foot and a half. Flowers in June and July.

*ŒNOTHERA SPECIOSA, (Handsome Œnothera.)—This has an erect, rather straggling stem, with oblong lanceolate leaves, and large white, very showy flowers; height two feet. Flowers in June and July.

*ŒNOTHERA FRASERII, (Fraser's Œnothera.)—The leaves tufted, ovate; the flowers large, showy, and yellow; height one foot and a half. Flowers in June and July.

*ŒNOTHERA MACROCARPA, (Large-fruited Œnothera.)—This is of a prostrate, decumbent habit; the leaves lanceolate; the flowers numerous, large, and very showy, yellow; height six inches. Flowers in June and July. Œnothera missourensis is very similar, differing chiefly in having narrower leaves.

OMPHALODES VERNA, (Spring Venus Navelwort.)—The root leaves ovate-cordate; the stems numerous, with few flowered racemes of small fine blue flowers, with a white throat; height from four to six inches. Flowers in March and April.

ONOSMA TINCTORIUM, (Dyer's Onosma.)—A dwarf, straggling, diffuse plant, with long narrow lanceolate leaves, and terminal racemes of yellow, swollen tubular flowers; height one foot. Flowers in May.

ONOSMA ECHIOIDES, (Bugloss-like Onosma.) This has numerous much-branched stems, with narrow tapering leaves, and tubular, bell-shaped, pale yellow flowers; height one foot. Flowers in May.

OPHRYS APIFERA, (Bee Orchis.)—Bulbous. This has ovate leaves; the flowers (orchidaceous) are in a loose spike, purple, with a dark brown mark, the marking resembling a bee; height nine inches. Flowers in June.

ORCHIS MORIO, (Meadow Orchis.)—Bulbous. The leaves are lanceolate; the flowers (orchidaceous) purple, in a spike; height six to nine inches. Flowers in May and June.

ORCHIS MASCULA, (Early purple Orchis.)—Bulbous. The leaves are ovate; the flowers purple, in a dense spike; height one foot. Flowers in April and May.

ORCHIS TEPHROSANTHOS, (Fine-lipped Orchis.)—Bulbous. The leaves ovate; the flowers pale purple, in a dense spike; height one foot and a half. Flowers in May.

ORCHIS MACULATA, (Spotted Orchis.)—Bulbous. The leaves oblong; the flowers flesh-coloured, in a spike; height one foot and a half. Flowers in June. There are many other handsome species of these curious plants.

ORNITHOGALUM UMBELLATUM, (Common Star of Bethlehem.)—Bulbous. The leaves long, narrow; the flowers in few-flowered corymbs, white, star-like; height one foot. Flowers in May.

ORNITHOGALUM NARBONENSE, (Narbonne Star of Bethlehem.)—Bulbous. The leaves long, very narrow; the flowers white, in an oblong raceme; height one foot and a half. Flowers in July.

ORNITHOGALUM MONTANUM, (Mountain Star of Bethlehem.)—Bulbous. The leaves are broadly linear; the flowers white, green outside, in erect racemose corymbs; height, one foot. Flowers in June.

OXALIS ACETOSELLA, (Common Wood-Sorrel.)—The roots bulbous; the root leaves trifoliate, supposed to be the true Irish Shamrock; the stems bearing two or three pretty little roundish, flesh-coloured, or white flowers; height, six inches. Flowers in May.

OXALIS STRICTA, (Upright Wood Sorrel. —This has a short upright stem, with the trifoliate leaves on long stalks, and small bunches of small yellow flowers; height, six to nine inches, or sometimes a foot. Flowers in July.

PÆONIA CORALLINA, (Coral-flowered Pæony.)—The leaves are divided into numerous ovate lobes or segments; the flowers like a large cup, crimson; height, three feet. Flowers in May and June.

*PÆONIA OFFICINALIS, (Common Pæony.) —The leaves are cut into ovate lance-shaped lobes; the flowers large, red; height, two feet. Flowers in May and June. There are numerous varieties, both with single and double flowers. The following are some of the named ones:—albicans, blanda, and carnescens, white; Baxterii, Sabini, and polypetala, crimson; rosea and rubra, red.

*PÆONIA TENUIFOLIA, (Fine-leaved Pæony.) —The leaves are cut into numerous narrow segments; the flowers large, and red; height, two feet. Flowers in May. There is a double variety.

*PÆONIA ALBIFLORA, (White-flowered Pæony.)—A good deal in the way of P. officinalis, but comprising some fine varieties, among which are, Richardsoni and sibirica, white; fragrans and Humei, red; Pottsii, crimson; tartarica and candida, flesh-colour; Reevesii and rubescens, pink; and Makoya, or festa, white and pink, the latter one of the most beautiful and delicate varieties in cultivation.

PAPAVER NUDICAULE, (Naked-stemmed Poppy.)—The whole plant is hairy; the leaves are pinnated; the flowers small, yellow;

height, one foot and a half. Flowers in June.

*Papaver bracteatum, (Bracted Poppy.)—A large, strong growing plant; the leaves are large, hairy, and pinnated; the flowers, on an erect stem, large, scarlet, with a black centre; height, three feet. Flowers in May and June.

Parnassia palustris, (Marsh Parnassia.)—The leaves are ovately heart-shaped; the flowers, on the top of an erect stem, butter-cup shaped, white; height, six to nine inches. Flowers in July.

*†Pentstemon Murrayanum, (Murray's Pentstemon.)—This has an erect stem; the root leaves spathulate; the flowers in racemes, tubular, scarlet, forming a long pyramidal spike; height, three feet. Flowers in September.

Pentstemon diffusum, (Diffuse Pentstemon.)—The root leaves are ovate oblong; the flowers two lipped, purple; axillary on a branched stem, forming a terminal panicle; height, two feet. Flowers in September.

*Pentstemon pulchellum, (Pretty Pentstemon.)—The stem branched, forming a round bush; the leaves are ovate-lanceolate; the flowers are inflated, lilac-purple, in a secund raceme; height, one foot and a half. Flowers in July.

*Pentstemon atropurpureum, (Dark-purple Pentstemon.)—This is of nearly the same habit as the last; the leaves are lanceolate; the flowers dark reddish-purple, in a panicle; height, two feet. Flowers in July.

*Pentstemon gentianoides, (Gentian-like Pentstemon.)—An erect branched, very showy plant, with large flowers; the leaves are lanceolate; the flowers in a large panicle, violaceous, or reddish purple; height, three feet. Flowers in July.

*Pentstemon speciosum, (Showy Pentstemon.)—The root leaves spathulate; the flowers in axillary, many-flowered cymes, on an erect stem, the whole forming a pyramidal panicle; they are inflated, two-lipped, sky blue, very handsome; height, two feet and a half. Flowers in August.

Pentstemon digitalis, (Foxglove-flowered Pentstemon.)—The root leaves broad, long; the flowers sub-campanulate, two-lipped, pure white, in an erect panicle; height, two feet and a half. Flowers in August.

*Pentstemon ovatum, (Ovate-leaved Pentstemon.)—This has ovate-cordate, root leaves; the flowers are tubular, two-lipped, brilliant purple blue; height, three feet. Flowers in July.

*Phlox divaricata, (Divaricate Phlox.)—This is a decumbent plant, with oval, lanceolate leaves, and loose, few-flowered panicles of purplish blue salver-shaped flowers; height, nine inches. Flowers in June.

Phlox canadensis, (Canadian Phlox.)—This has an erect stem; the leaves are ovate; the flowers in loose panicles, blue tinged with lilac; height, one foot. Flowers in May.

*Phlox Broughtonii, (Broughton's Phlox.) This is a splendid plant; the leaves are cordate ovate; the flowers large, very round, rose-coloured, in a dense, pyramidal panicle; height, three feet. Flowers in August and September. Some of the hybrids of this genus are very fine; among them are—Lorainii, Bridgesii, Coldryana, Allcardii, Pottsii, Ingramiana.

*Phlox procumbens, (Procumbent Phlox.)—A dwarf plant; the leaves are lanceolate; the flowers bluish purple, in few-flowered panicles; height, six inches. Flowers in May.

Phlox setacea, (Bristle-leaved Phlox.)—A dwarf plant; the leaves are subulate, tufted; the flowers pale rose-coloured, with a deeper star in the centre, in few-flowered panicles; height, six inches. Flowers in April and May.

Phlox tardiflora, (Late-flowering Phlox.)—The leaves of this are lanceolate; the flowers pure white, fragrant, in panicled racemes; height, two feet and a half. Flowers in September and October.

*Phlox suaveolens, (Sweet-scented Phlox.)—The leaves are ovate-lanceolate; the flowers in panicled racemes, white, sweet-scented; height, one foot and a half. Flowers in August.

*Phlox omniflora, (Ever-flowering Phlox.)—This has ovate leaves, and large pyramidal panicled corymbs of white flowers; the stems throw out side branches, which also flower freely; height, one foot and a half. Flowers in August.

*†Phlox Van Houttei, (Van Houtte's Phlox.)—This has lanceolate leaves; the flowers are produced in a large panicle at the top of the erect stems; they are purple, with a white bar down the centre of each of the five segments into which the salver-shaped corolla is divided; height, two to three feet. Flowers in August.

Phlox reptans, (Creeping Phlox).—This is a decumbent, spreading plant; the root leaves are obovately spathulate, the stem ones lanceolate; the flowers are blue-purple, in small corymbs; height, six inches. Flowers in June.

Phlox cordata, (Heart-shaped leaved Phlox.)—This has erect stems; the leaves oblong cordate; the flowers salver-shaped, purplish lilac, in a pyramidal corymbose panicle; height, two feet and a half. Flowers in August.

Phlox acuminata, (Acuminate-leaved Phlox.)—This has erect downy stems, and ovate-lanceolate leaves; the flowers are purple, salver-shaped, in a corymbose panicle; height, three feet. Flowers in August.

Physostegia virginica, (Virginian Physostegia.)—The stem erect; the leaves usually lanceolate; the flesh-coloured, or pale purple flowers, nearly sessile, in terminal racemes; height, two feet. Flowers in August.

Phyteuma orbiculare, (Orbicular Phyteuma.)—The root leaves are lanceolate, sub-cordate; the upper ones linear lanceolate; the flowers in globular heads, violet blue; height, two feet. Flowers in July.

*Polemonium cœruleum, (Common Greek Valerian.)—The root leaves pinnate, leaflets ovate lanceolate; the stem erect, with terminal corymbs of rotate (roundish) flowers of a purple blue colour; height, one foot and a half. Flowers in June. There is a white variety.

*Polemonium sibiricum, (Siberian Greek Valerian.)—The root leaves are pinnate, the leaflets pinnatifid; habit same as the last; flowers white; height, two feet. Flowers in June and July.

*Polemonium reptans, (Creeping Greek Valerian.)—The root creeping; the leaves pinnate, the leaflets ovate; the flowers blue, nodding, in a loose panicled corymb; height, six inches. Flowers in April and May.

*Potentilla Thomasii, (Thomas's Cinquefoil.)—The leaves tufted, palmated, divided into seven ob-ovate lobes; the stem erect, branching in a corymbose manner, and bearing numerous large, yellow, rosaceous flowers; height, one foot and a half to two feet. Flowers in June.

*†Potentilla insignis, (Specious Cinquefoil.)—The stem erect, branching; the leaves ternate (three oval leaflets); the flowers large, deep yellow; height, two feet. Flowers in July and August.

*Potentilla atrosanguinea, (Blood-red Cinquefoil.)—The leaves trilobed, silky; the stem decumbent at the base, afterwards erect, branched, bearing large, rosaceous, blood-red flowers; height, one foot and a half. Flowers in July. P. Russelliana is a hybrid much resembling this. P. coccinea, with dark scarlet flowers, is also a hybrid. P. Hopwoodiana and P. Mackayana, have large creamy flowers edged with pink, very showy; and P. Mayana, yellow and pink flowers; these three probably varieties of a species called P. formosa.

Prenanthes purpureus, (Purple Prenanthes.)—This has an erect stem, with oblong lanceolate leaves, and loose panicles of small purple composite flowers; height, one foot and a half. Flowers in August.

*Primula cortusoides, (Cortusa-leaved Primrose.)—The leaves are cordate, tufted; the stem erect, bearing an umbel of erect red primrose flowers; height, one foot. Flowers in May.

*Primula nivalis, (Snowy Primrose.)—The leaves ovate; the flowers in a many-flowered umbel; white; height, six inches. Flowers in April.

*Primula verticillata, (Whorled Primrose.)—The leaves are oblong acute; the flowers in whorls, numerous, small, dingy yellow; height, three inches. Flowers in March.

*Primula farinosa, (Bird's-eye Primrose.)—The leaves are cuneate lanceolate; the flowers in a many-flowered umbel, small, reddish; height, six inches. Flowers in June. There are more than a dozen species of Primrose, all very pretty and desirable.

*Psoralea macrostachya, (Broad-spiked Psoralea.)—A pretty plant, with rough, trifoliate leaves, the leaflets ovate; and axillary dense spikes of purple, pea-shaped flowers; height, one foot. Flowers in June and July.

Pulmonaria officinalis, (Common Lungwort.)—An upright plant, with ovate cordate, spotted leaves, and corymbose racemes of red and violet, funnel-shaped flowers; height, one foot. Flowers in May.

Pulmonaria azurea, (Azure-blue Lungwort.)—The root-leaves are oblong lanceolate; the flowers in corymbose terminal racemes, the tube red, and the limb azure blue; height, one foot. Flowers in May.

Pyrola rotundifolia, (Round-leaved Pyrola.)—A dwarf plant, with sub-rotund tufted leaves; and a small erect racemose scape, bearing small white spreading flowers; height, six to nine inches. Flowers in June and July.

Pyrola minor, (Small Pyrola.)—This has roundish oval leaves, and a racemose scape of small white and red flowers; height, six inches. Flowers in June.

*Ranunculus aconitifolius, (Aconite-leaved Crowfoot.)—The root-leaves are palmated with from three to seven lobes; the flowers are small, white, buttercup-shaped, on a branching spreading stem; height, one foot, or upwards. Flowers in May. A variety of this, with broader-lobed leaves, is called R. platanifolius, and it varies with pretty double white flowers.

Ranunculus parnassifolius, (Parnassia-leaved Crowfoot.)—This has cordate-ovate (that is, ovately heart-shaped) leaves; the flowers, on an upright stem, white; height, upwards of one foot. Flowers in June.

Ranunculus gramineus, (Grass-like Crowfoot.)—The leaves are lanceolate, linear; the flowers, on an upright stem, yellow; height, one foot. Flowers in May. There is a double variety.

Rudbeckia hirta, (Hairy Rudbeckia.)—The leaves are broadly ovate; the stem somewhat branching, bearing at the ends a large composite yellow flower, with a dark purple centre, or disk; height, two feet. Flowers in August.

*RUDBECKIA FULGIDA, (Fulgent Rudbeckia.)—The leaves oblong lanceolate, hairy; the stem branching, bearing several flowers, which are deep yellow, with a dark purple centre; height, three feet. Flowers in July.

SALVIA VERTICILLATA, (Whorled Sage.)—This is erect, branched; the leaves are lyrate; the flowers in whorled racemes, bluish violet; height, three feet. Flowers in August.

SALVIA GLUTINOSA, (Clammy Sage.)—An erect, branching plant, with large ovate-oblong leaves, and whorled racemes of gaping, labiate, pale yellow flowers; height, three feet. Flowers in July.

*†SALVIA HIANS, (Gaping Sage.)—An erect branching plant, with broad ovate leaves, with a broad arrow-shaped base; it has whorled racemes of showy blue and white, labiate, gaping flowers; height, two feet. Flowers in June and July.

SALVIA BICOLOR, (Two-coloured Sage.)—This is erect, branching; the leaves are large, ovate; the flowers in whorled racemes, one to two feet long; the upper lip bluish violet spotted with white, the lower lip yellow; height, three feet. Flowers in July.

†SALVIA CANESCENS, (Hoary Sage.)—The stems are erect; the leaves lanceolate oblong; the flowers labiate, in a whorled spike or raceme at the top of the stem, lilac; height, two feet. Flowers in July.

*†SALVIA CONFERTIFLORA, (Close-flowered Sage.)—This is a showy plant, with erect stems; large ovate oblong root leaves; and a long narrow raceme, or spike, of small tubular, gaping orange flowers, collected in whorls a little distance apart; height, three feet. Flowers in August.

SAXIFRAGA CRASSIFOLIA, (Thick-leaved Saxifrage.)—This has large, thick, obtusely-ovate leaves; and the flowers are produced in sub-cymose, dense heads, and are of a pretty purple colour; height, six inches. Flowers in April. S. cordifolia a good deal resembles this, but has rounder leaves.

*SAXIFRAGA UMBROSA, (London Pride.)—This will grow well even under the drip of trees. The leaves are obovate, and crenated; the flower, flesh-coloured, prettily spotted, small, star-shaped, numerously produced on a branching and spreading stem; height, one foot and a half to two feet. Flowers in May.

*SAXIFRAGA OPPOSITIFOLIA (Opposite-leaved Saxifrage.)—This is a dwarf trailing plant, with spreading branches, covered with small imbricated leaves, and (comparatively) large round purple flowers, studded along the branches; height, three inches, or less. Flowers in March. A beautiful plant for rock work, and for pot culture.

SAXIFRAGA HYPNOIDES, (Hypnum-like Saxifraga.)—A dwarf rock plant, with narrow three to seven lobed leaves, growing in a dense tuft; the stem bears a few white flowers, composed of five ovate petals, forming a star-like figure; height, six inches. Flowers in May. There are many varieties of this species, so closely resembling each other, as to be scarcely distinguishable.

SAXIFRAGA TRIDACTYLITIS, (Three-fingered leaved Saxifrage.)—A plant often found on old walls, and interesting, as being one of the very first British plants to be met with in bloom, flowering in March and April, and bearing two or three small white flowers; the leaves are three-fingered, and, from the situation in which they grow (old walls, &c.), are often quite red; height, three inches.

* SAXIFRAGA GRANULATA, (Granulated Saxifrage.)—This is a showy species, with kidney-shaped, lobed leaves, and panicles of large white flowers, on an erect stem; height, one foot. Flowers in May and June. There is a double variety of this, which is a very showy plant.

*†SCILLA CUPANIANA, (Cupani's Squill.)—Bulbous; the leaves are lanceolate; the flowers purple, with a bright blue pistil, in loose corymbs; height, one foot. Flowers in June.

*SCILLA BIFOLIA, (Two-leaved Squill.)—Bulbous; the leaves linear lanceolate; the flowers small, star-like, blue, in short racemes; height, three inches. Flowers in March and April. There are varieties with pink and with white flowers.

*SCILLA SIBIRICA, (Siberian Squill.)—Bulbous; the leaves linear lanceolate; the flowers blue, in a short raceme; height, three inches. Flowers in March.

SCILLA HYACINTHOIDES, (Hyacinth-like Squill.)—Bulbous; the leaves larger than the last; the flowers, in an erect loose spike, blue; height, six inches. Flowers in August.

SCILLA PERUVIANA, (Corymbose-flowered Squill.)—Bulbous; the leaves are like the last; the flowers in a conical clustered corymb, dark blue; height, one foot. Flowers in May. There are many other species of Scilla, all of which are pretty, and worth growing; blue is the prevailing colour, but there are some pink, and some white.

SEDUM ACRE, (Acrid Stone-crop.)—A creeping, succulent leaved plant; the leaves ovate, closely pressed to the stem; the flowers in little three-forked heads, small star-like, bright golden yellow; height, three inches. Flowers in June. A handsome plant to plant on rockwork, on the tops of walls, or in any similar situation.

SEDUM TELEPHIUM, (Common Orpine.)—This has an erect stem, with large oval, notched leaves; and terminal corymbs of showy rosy purple star-like flowers; height, two feet. Flowers in August.

SEDUM SEMPERVIVUM, (Sempervivum-like Sedum.)—The leaves of this plant are spathulate-ovate; the flowers, in panicled corymbs, deep purple red, star-like; height, six inches. Flowers in July. This is also known under the name of Sedum sempervivoides.

*†SEDUM SIEBOLDTII, (Sieboldt's Sedum.—A dwarf bushy plant, with orbiculate, fleshy, grey looking leaves, and terminal corymbs of showy pink flowers; height, six to nine inches. Flowers in June.

*SILENE REGIA, (Splendid Catchfly.)—Very showy; the leaves are lance-shaped; the flowers round, flat, with irregular notched edges, crimson; height, one foot and a half. Flowers in June.

SOLDANELLA ALPINA, (Alpine Soldanella.)—The leaves round; the flowers purple, funnel-shaped, drooping, fringed; height, three inches. Flowers in April.

SOLDANELLA MONTANA, (Mountain Soldanella.)—The leaves much as in the last; the flowers fringed, bell-shaped, purple; height, three inches. Flowers in April.

*SOLIDAGO HUMILIS, (Dwarf Golden Rod.)—The stem erect; the leaves ovate lanceolate; the flowers small, yellow, composite, in erect racemes; height, one foot. Flowers in July.

SOLIDAGO PROCERA, (Tall Golden Rod.)—The stem erect; the leaves lanceolate; the flowers small, composite, yellow, in erect, spike-formed racemes; height, four feet. Flowers in September.

*SOLIDAGO REFLEXA, (Reflexed Golden Rod.)—The stem erect; the leaves lanceolate acuminate; the flowers small, composite, yellow, in sub-secund racemes; height, three feet. Flowers in August.

*SPIGELIA MARILANDICA, (Maryland Worm-grass.)—This is a small plant with erect simple stems; oval lanceolate leaves; and terminal short spikes of erect tube-shaped, or funnel-shaped scarlet and yellow flowers, very showy; height, one foot. Flowers in August.

SPIRÆA ARUNCUS, (Goat's Beard Spiræa.)—An upright plant with tri-pinnate leaves; that is, three times pinnated; the flowers small, white, in dense corymbs; height, three feet. Flowers in June.

*SPIRÆA FILIPENDULA, (Pendulous Drop-wort.)—An elegant plant, with finely pinnated leaves, and corymbs of small white flowers; height, two feet. Flowers in August. A double-flowered variety, called multiplex, is very handsome.

STATICE GMELINI, (Gmelin's Sea Lavender.)—The leaves tufted, elliptic, mucronate; the flowers individually small, five-petalled, light purple, in a much-branched panicle; height, one foot. Flowers in July. The flowers of most of the Statices are crowded, on the upper side of the tips of the numerous branches.

STATICE EMARGINATA, (Emarginate Sea Lavender.)—The leaves tufted, large, spathulate; the flowers blue, in an erect, very numerously branched panicle, forming a beautiful head of bloom; height, one foot and a half. Flowers in July.

STATICE SPATHULATA, (Spathulate-leaved Sea Lavender.)—The leaves small, tufted, spathulate; the flowers purple, in an erect branched, or forked raceme; height, one foot. Flowers in July.

STATICE SPECIOSA, (Showy Sea Lavender.)—The leaves tufted, obovate; the flowers whitish, crowded or imbricated on the branching scape or stem; height, one foot. Flowers in July.

STATICE INCANA, (Hoary Sea Lavender.)—The leaves tufted, lanceolate; the flowers pink, in a branching panicled scape; height, one foot. Flowers in June.

STATICE BELLIDIFOLIA, (Daisy-leaved Sea Lavender.)—The leaves small, tufted, obtuse; the flowers in an erect forked raceme, purple; height, one foot. Flowers in July.

STATICE OLEIFOLIA, (Olive-leaved Sea Lavender.)—The leaves tufted, spathulate, obtuse; the flowers in a panicled scape, red; height, one foot. Flowers in June.

STERNBERGIA LUTEA, (Yellow Sternbergia.)—Bulbous; a good deal like a Crocus, but with broader leaves; the leaves linear, short, obtuse; the flowers light yellow, like a Crocus; height, six inches. Flowers in August and September.

SYMPHITUM BOHEMICUM, (Bohemian Cornfrey.)—This is a large rough plant, with large ovate lanceolate leaves, and racemes of campanulate, reddish purple flowers; height, two feet. Flowers in July.

*TAGETES LUCIDA, (Shining-leaved Tagetes, or Marigold.)—This has an erect, scarcely branched stem; the leaves lanceolate; the flowers in little heads, small, yellow, showy; height, one foot. Flowers in August. Scarcely hardy.

TELLIMA GRANDIFLORA, (Large-flowered Tellima.)—The leaves of this are roundly cordate, obtusely lobed; the flowers are small, pink, in a somewhat regular loose spike; height, one foot. Flowers in April and May.

THALICTRUM ALPINUM, (Alpine Meadow Rue.)—The Thalictrums are interesting, though not showy, herbaceous plants; the leaves are composed of numerous leaflets, something in the way of the Columbine; the habit branching; the flowers yellowish, drooping, and composed principally of small thread-like portions; height, about one foot and a half. Flowers in June.

*THALICTRUM MINUS, (Least Meadow Rue.)—A very interesting plant, resembling the last in general character, but much smaller; the flowers are pale yellow, with brown stamens; height, from nine inches to a foot. Flowers in June.

THALICTRUM MAJUS, (Large Meadow Rue.)—With the same character as the preceding, but altogether larger, growing from two and a half to three feet high. Flowers in June.

*THERMOPSIS FABACEA, (Bean-like Thermopsis.)—The leaves trifoliate; the leaflets broadly oval; the flowers in a small raceme, at the termination of the shoots, on an erect, slightly branching stem, pea-shaped, yellow; height, one foot and a half. Flowers in June.

TIARELLA CORDIFOLIA, (Heart-leaved Tiarella.)—The root leaves are cordate, acutely lobed; the flowers white, small, in a simple raceme, at the top of the naked stem; height, one foot. Flowers in April.

*TIGRIDIA PAVONIA, (Mexican Tiger-flower.) Bulbous. The leaves sword-shaped, plaited; the flowers of three large reflexed petals, and three intermediate smaller ones, orange, spotted in the centre with reddish brown; height, one foot. Flowers in May. The flower endures but one day.

*TIGRIDIA CONCHIFLORA, (Shell-flowered Tiger-flower.)—Bulbous. The leaves and flowers in the way of the last, but the latter of a deeper yellow or orange; height, one foot. Flowers in May.

*TRADESCANTIA VIRGINICA, (Virginian Spider Wort.)—The stem erect, leafy; the leaves lanceolate; the flowers in terminal clusters, of three petals, blue; height, one foot and a half. Flowers in May. There are varieties of this plant with different coloured flowers.

*†TRADESCANTIA CARICIFOLIA, (Sedge-leaved Spider Wort.)—The stem erect; the leaves linear, acuminate; the flowers blue; height, one foot. Flowers in August.

TRADESCANTIA PILOSA, (Hairy Spider Wort.)—The stem branched; the leaves lanceolate; the flowers purple; height, two feet. Flowers in September.

TRIFOLIUM RUBENS, (Red-flowered Clover.)—The leaves, as the name implies, are trifoliate; the leaflets oblong; the stem is erect, bearing a large dense raceme of small crimson-red, pea-shaped flowers, which are very showy; height, one foot and a half. Flowers in July.

TROLLIUS EUROPÆUS, (European Globe-flower.)—A showy plant; the leaves are palmate, a good deal like those of some of the Crowfoots; the flowers like a large yellow double buttercup, with the petals incurved, giving the flower a globular appearance, whence the trivial name; they are borne on a slightly branching stalk; height, one foot. Flowers in May.

*TROLLIUS ASIATICUS, (Asiatic Globe-flower.)—Much like the last, differing chiefly in having dark orange-coloured flowers. Flowers in May.

*†TROLLIUS ACAULIS, (Stemless Globe-flower.)—A handsome dwarf kind, with golden yellow, spreading, cup-like flowers; height, six inches. Flowers in July.

TULIPA OCULIS SOLIS, (Agen Tulip.)—Bulbous; the leaves are lanceolate; the flowers, of six-pointed spreading petals, red, with black centre; height, one foot. Flowers in May.

*TULIPA CLUSIANA, (Clusius's Tulip.)—Bulbous; the leaves are linear lanceolate; the flowers small, spreading, white, with purple centre; height, one foot. Flowers in June.

TULIPA CELSIANA, (Cels's Tulip.)—Bulbous; the leaves linear lanceolate; the flowers yellow; height, one foot and a half. Flowers in June.

*TUPA BLANDA, (Pale-coloured Tupa.)—These are allied to the Lobelias; the stem is erect, triquetrous; the leaves lanceolate acuminate; the flowers pale rose-coloured; height one foot and a half. Flowers in August. Scarcely hardy.

TUPA FEUILLEI, (Feuille's Tupa.)—The stem is erect, simple; the leaves oval; the flowers scarlet or crimson; height, one foot and a half. Flowers in September.

TUSSILAGO FARFARA, (Common Coltsfoot.)—This has cordate angulated leaves, and yellow-rayed flowers, produced earlier than the leaves, on short stems about three inches high. Flowers in March.

*VERONICA CHAMÆDRYS, (Germander Speedwell.)—This has ovate leaves, and axillary few-flowered racemes of large rotate blue flowers; height, six inches. Flowers in June. This varies with flesh-coloured and with white flowers.

VERONICA LATIFOLIA, (Broad-leaved Speedwell.)—This has sub-cordate ovate leaves, and axillary dense racemes of blue flowers; height, two feet. Flowers in May.

*VERONICA CAUCASICA, (Caucasian Speedwell.)—A dwarf plant, with bi-pinnatifid leaves; and axillary, few-flowered racemes of pale red flowers; height, six inches. Flowers in June.

*VERONICA MARITIMA, (Sea-side Speedwell.)—This is erect, with ovate-lanceolate tufted leaves, three or four in a whorl; the flowers are small, rotate, in dense terminal racemes, or long narrow spikes; they are blue, varying to purple, and white; height, two feet. Flowers in August.

Veronica spicata, (Spike-flowered Speedwell.)—This has oblong tufted leaves, and narrow spicate racemes of blue flowers; height, one foot. Flowers in August.

*Veronica hybrida, (Hybrid Speedwell.)—This has ovate tufted leaves, and dense oblong spicate racemes of blue flowers; height, one foot. Flowers in August.

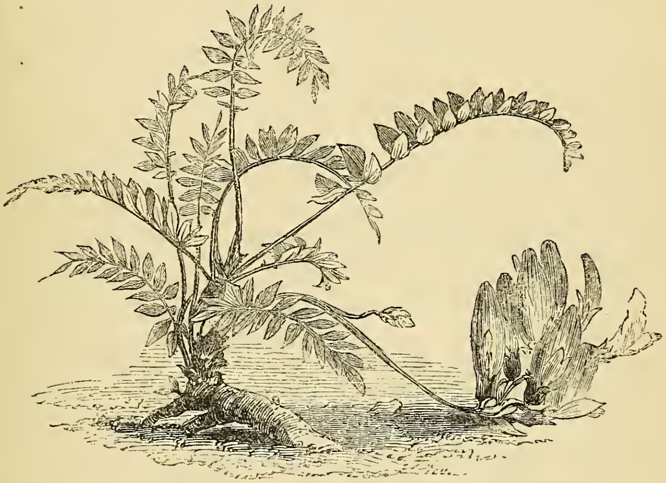
*Veronica gentianoides, (Gentian-like Speedwell.)—This has broader, glossy, oblong, tufted leaves, and loose racemes of pale-coloured flowers; height, two feet. Flowers in June.

Veronica elegans, (Elegant Speedwell.)—The leaves are ovate oblong, tufted and spiked racemes of showy rose-coloured flowers; height, one foot and a half. Flowers in June, and remains in bloom till the end of the summer.

*Veronica incana, (Hoary Speedwell.)—This has lanceolate oblong leaves, and terminal spicate racemes of blue flowers; height, one foot. Flowers in August.

Vinca herbacea, (Herbaceous Periwinkle.)—A procumbent plant, with oblong lanceolate leaves, and purplish blue salver-shaped blossoms; height, six inches Flowers in June and July.

Viola odorata, (Sweet-scented Violet.)—There are a great number of species of Viola, all dwarf, and mostly pretty plants. There are, however, none more interesting than the common Sweet Violet, in its several varieties; there are purple, white, and blue, both single and double, of each; and a beautiful large pale blue, double variety, called the Neapolitan. The Pansy is the offspring of some other species of Viola.



ASTRAGALUS MONSPESSULANUS.

This belongs to rather an extensive genus of Leguminosæ, some of which are very handsome. Most of them are hardy, some Annual, others Perennial. This is an evergreen trailing Perennial, with a purple flower, very much concealed by the foliage. It is indigenous in the south of France, and said to be also to the mountains of Switzerland. It is not so showy as many of the same family; and, it is said, will only propagate from seed. This we doubt; but as seed will ripen in the open ground in this country, there is no difficulty about it. The plant will grow in almost any soil, and requires no particular culture; merely sowing the seed on the land or border, and either thinning it out, or planting it out, where it is to bloom. We do not value it at all, but there are those who do.

THE CULTURE OF THE GERANIUM,

AS BROUGHT TO MARKET, AND ALSO WITH SINGLE TRUSSES OF BLOOM.

The wonderful difference between the Geranium, as brought into the flower-markets, and as exhibited for prizes, would induce some to think that the same variety, differently grown, were not the identical sort; yet the plants, which are grown by tens of thousands to furnish the different towns, are always pleasing, and the blooms are frequently much better in their individual trusses, than those with which so much pains have been taken. It is almost questionable whether there may not, some day, be an alteration in the mode of showing, so as to produce individual trusses in finer condition, and show the flower in perfection; but if so, the treatment will require to be something like pinks and pansies, shown only a season old,—that is to say, cuttings taken off, and grown up for single trusses, all others being taken away to throw the strength into the principal. We have remarked, that the plants grown by nurserymen, who do not regard size, and never wish to see large ones, always bloom finer than show flowers. Geraniums, like pinks and pansies, never bloom so well on old shoots, or plants, two years old, as on those of one; yet, at present, there is no moving the present vulgar taste for monster plants, and trumpery but numerous flowers. The treatment of this plant, by those who grow them by thousands for market, is very simple, and may soon be commenced. The first step is, to

PROPAGATE BY CUTTINGS.

As soon as the Geranium plants are out of bloom—say the end of June—you may cut them all in, and what comes off may be formed into cuttings to strike. These should be about two or three inches long; cut up the bottom of the stem to the under part of a leaf, which is always a joint, and put these in the common ground, under a hand-glass, where, shaded from the hottest of the sun, and watered properly, they will quickly strike root. As soon as they begin to grow, give plenty of air, and leave the glasses off.

POTTING THE CUTTINGS OFF.

About the latter end of July, pot them off, one each, in forty-eight sized pots, putting low down in the pot, so that the lower leaves may be nearly down to the mould; and place them on hard ground, that worms will not come through, and water them whenever the soil appears dry. The mode of doing this is as follows:—As soon as you can be sure they are rooted, under the hand-glass, this potting business should be done. Crocks should be placed on the bottom, with a bit of moss, or peat, on them, to prevent the mould from washing into them, and use a soil, composed of two-thirds loam, and one-third dung, well mixed together. In these pots they will begin to grow soon.

STOPPING THE PLANTS.

The entire art of making these plants bushy, so as to cover the pots, and be dwarf at the same time, consists in judiciously stopping the plants, which is no more nor less than pinching off the end, or, as it were, pinching the heart out; but this should not be done until there are two-pair of leaves, besides the part to be pinched off. This stopping induces side shoots directly, and the pots have to be looked over occasionally to see that none of the side shoots grow too vigorously; if any are found doing so, they must be pinched back, to keep the plant in form: watering in the dry weather, frequently removing the pots, to prevent the roots from getting through, or growing into the ground. In this way they are grown until September.

HOUSING THE PLANTS.

If the plants have made good bushy growth, and have filled the pots with roots, you may do as you please about shifting them into pots of thirty-two size. Most persons, who merely supply the market, want to get as many pots into a house as possible; others, who have room, and want to make larger plants, shift all the handsome plants into thirty-two sized pots, giving them a good watering to settle the soil about the ball of earth, and then place them on the shelves in the Geranium-house, which should always be so constructed as to allow the plants to be pretty near the glass. This house should be kept from frost; but ought not to be heated a single degree more than is absolutely necessary for that purpose. The temperature should be as even as possible, and they should have air and light, as much as it is practicable to give them without danger. About once a week they will require examination, to see how they are affected for moisture. It is not desirable to keep them wet, but they must not be distressed for water; towards January and February, the temperature is necessarily raised a little; but this ought to be reversed from the ordinary practice. In most nurseries you see all the fires are being lighted in the evening. Now, it has long been a settled point with gardeners, who know their business, that the temperature at night should be lower than by day. In most places, as we have shown, the case is opposite, the temperature is gradually raised from sunset by closing the houses, and lighting the fires. The proper way is, keep down the night temperature as much as possible, so that frost is but avoided. The plants now gradually advance to bloom at the ends of all the shoots; and, in proportion to the temperature at which the house is kept through the winter, so will the plants flower early or late. Generally, they will be all in flower in May or June, without much forcing.

BLOOMING WITH ONE TRUSS.

In this case the plant has to take its chance, except that, when first potted, it should be put as low in the pot as possible; and, as it grows up, instead of removing the top shoot, let it grow. When it is time to take them into the house, pot them into thirty-two sized pots, lowering them down to the under leaves, to make them as dwarf in appearance as possible, and also to give them the advantage of striking roots higher up the stem, if inclined. Any side shoot that appears must, as soon as it has made two leaves, be pinched at the end to stop its growing; for, in this case, instead of wanting a bushy plant, with several trusses of bloom on them, we want only one shoot, and a single truss, which truss will be very much finer than those with many flowers, or even those with only three or four trusses.

APPLICATION OF LIQUID MANURES.

It is the practice of many to administer liquid manure as soon as the trusses of bloom can be seen. Of this there are many kinds: cow-dung, sheep's-dung, poultry-dung, and some of the fertilizing liquids, are used with various success, and a solution of sulphate of ammonia, in water, has been recommended upon high authority. We have seen its good effects on Fuchsias, and have very little doubt of its efficacy in anything. This fertilizer has been mentioned in a former part of the work: with regard to the dung of poultry, two pounds weight to ten gallons of water; and, with respect to cow or sheep's dung, a gallon in measure to ten gallons of water, will be found sufficient; let the manure and water be stirred together a day before it is used, and settle down again. The liquid then may be applied about every fifth or sixth watering, and not oftener. It is said to give the bloom a better colour, and a greater strength; and it is certain that, applied once to five times of clear water, it can do no harm.

PROLONGING THE BLOOMS.

This can only be accomplished by placing the plants in the cool shade,—a very brief period of sunshine on the flowers would destroy them. The usual mode of keeping them, is to have a shade of canvass inside, and not outside the house; for then the windows, or rather the lights, can be opened in hot weather, and the plants be protected by the cloth. A canvass-house would be the very best contrivance for Geraniums, with a roof to roll up, and sides to open out, so that air could be given, or withheld, as the weather may warrant. In this way a few thousand plants can be got ready for market in nine months, and kept in good market order several weeks; and by those means, plants with single trusses, grown on purpose for exhibition, may be kept in fine order for a considerable time.

GENERAL REMARKS.

It is worthy of remark that, do as you will with large plants, it is morally impossible to get the individual flowers so large and thick, and well coloured, and free from crumpling, as small ones; and it has even been tried whether two trusses will come as fine as one on the same plant; but the proof is in favour of a single truss. It appears quite as detrimental to the Geranium to have two trusses on a plant, as it does to a Polyanthus or an Auricula; and it is to be hoped that, however much it may be determined to encourage the growth of large unwieldly plants, there may be taste enough in some of the popular societies to provide prizes, also, for plants with a single bloom, or rather single truss. It is nothing but the mode of growing, that makes the fine seedling of one year come the poor ruined flower of the year following; and the raisers of Geraniums will do well to try the experiment of the single truss on a cutting of the previous summer, and they will be convinced that we are right in wishing the Geranium to be grown and shown as a true florist's flower. Nothing would look more unique nor more beautiful, than a dozen plants, with single trusses, gracing the table of any horticultural exhibition.

HORTUS CANTABRIGIENSIS.*

The thirteenth edition of this truly valuable work has just issued from the press, and not before the vast number of new plants, and even new generas, rendered it necessary. Our readers are aware that an authentic accented dictionary or catalogue of indigenous and exotic plants, is of the highest importance to all who take an interest in botany, and to collectors in particular; and we need hardly tell them that the errors and confusion of several already in the hands of the public, give a double value to a work which we can depend on for accuracy.

The first edition of the Hortus Cantabrigiensis was brought out under the superintendence of the late James Donn, Curator of the Cambridge Botanic Garden, and Fellow of the Linnæan and Horticultural Societies. It has been successively increased in value by several additions made from time to time, and is "now further enlarged and improved by P. N. Don." We have already found it of infinite service. To give an idea of its comparative usefulness, let us turn to the article Vitis, the Vine. We have sixteen species; three from Asia, one from Nepal, three from the East Indies, one from Sierra Leone, one from the West Indies, and seven from North America. There is no mixture of seedlings with species, but we there find the species Vinifera, the common, and the only really useful one, detailed thus:—For the open wall, Black July, Turner's Hardy, Miller's Burgundy, White Sweetwater, Common Muscadine, Black Muscadine, Pitmaston White Cluster, Cambridge Botanic Garden, and Frankendale. For the vinery; Black Hamburgh, White Corinth, White Frontignac, Black Corinth, Black Frontignac, Grizzly Frontignac, Muscat of Alexandria, (White,) Malmsey, (White,) Verdelho, (White,) West's St. Peter's, (Black,) Horsforth's Seedling, (Black,) Black, or Morocco, Poonah, (Black,) Royal Muscadine, (White,) or Chasselas de Fontainebleau, Black Damascus, White Sweet Water, White Syrian, and Striped Aleppo. All the other genera are equally well treated, and the book may not only be looked upon as an authority, but in these details a very useful monitor. The author's preface is worth reading, and we are not at all displeased to observe that there is no pedantry, no throwing Linnæus overboard; but his system of botany is treated with the respect due to his genius. Mr. Don says—

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* Hortus Cantabrigiensis; or an accented Catalogue of Indigenous and Exotic Plants, &c. By the late James Donn, Curator, Fellow of the Linnæan and Horticultural Societies. London: Simpkin, Marshall, and Co.

"The present edition has been entirely re-written; all the species of the former ones have been retained where an authority could be found for the names, but where these were wanting the species have been rejected. The reason which has induced me to adopt this course is, that there are many names current in gardens which have long become obsolete, as well as many which had never any good foundation, having been given by persons entirely unacquainted with botanical science. I have therefore deemed it necessary to annex to each genus and species the name of some well-known botanist, or of works in which such plants are either described or figured, or both. How far I have succeeded in my object, a careful perusal of the present work will show.

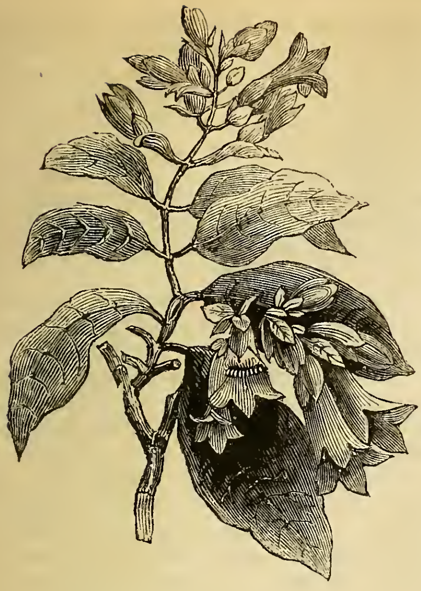
"Woodcuts of the most common and familiar flowers are given to represent each class and order, which will be found useful to those unacquainted with the Linnæan system of botany; and by carefully examining the woodcuts, and the short descriptions annexed to them, it is confidently hoped that no difficulty will be experienced in referring any plant to its true class and order. I am not aware that any plant has yet been discovered, which cannot be assigned to some one of the twenty-four classes of Linnæus into which that truly great man distributed the vegetable kingdom; and we may infer that this system, although artificial, cannot be far from perfect from this fact, that it includes every plant yet discovered. But although I speak thus highly of the Linnæan system, I am very far from undervaluing the natural arrangement, which, when perfected, will no doubt be the most comprehensive: it is not so, however, at present; for botanists seem undecided to what extent the orders should be carried; some desiring to extend them greatly, others to reduce and divide them into several:—which botanists may have the clearest ideas, time will show. I may further add, that scarcely a year passes without some discovery disturbing the very imperfect state of the natural system as at present understood; my humble opinion therefore is, that the Linnæan system, however imperfect it may be deemed, cannot as yet be dispensed with.

"The great number of species that have been added to the gardens within the last few years, has necessarily enlarged the present edition much beyond any former one; whilst the changes which botanists have thought it necessary to introduce into the old genera, have greatly tended to produce the same effect. No opinion is here intended to be given on the correctness or incorrectness of these alterations; but the fact of their having been adopted in the gardens, is a sufficient reason for their adoption in a work of this nature: nor is there any reason to doubt that botanists, in making such alterations, are solely actuated by a desire for the advancement of the science. But to preclude any ill that might arise from their introduction into the present work, all the old names of each genus are added in italics, so that the student may adopt or reject them, as his judgment may decide.

"In the index are given in italics the names of all those genera which are changed, with the names of the genera into which each genus has been divided: so that any person unacquainted with the changes which have taken place, will thus be enabled easily to find out any genus of which he may be in search, without the necessity of perusing the body of the work."

We highly recommend this work: the typographical accurary of its contents is very creditable both to the author and printer. We are, however, rather disposed to question the honesty of the editor, when he says, "Nor is there any reason to doubt that Botanists, in making such alterations, are solely actuated by a desire for the advancement of the science." In this instance we think his politeness has got the better of his conviction, and must give him credit for more discernment than he chooses to avow.

Mr. Don has acquitted himself well, and although the title of the work implies that it is a catalogue of the plants grown at the Cambridge Botanic Garden, which in fact it originally was, it is now the most perfect botanical dictionary we possess, and it is not too much to say, that it ought to be in every botanical library, and should be supplied to every gardener.



WHITFIELDIA LATERITIA.
(*Hooker.*)
BRICK-COLOURED WHITFIELDIA.

The present plant belongs to the Linnæan class, and order Didynamia Angiospermia; and in the natural system of Botany, to the order Acanthaceæ, including those plants which agree in certain important points of structure with the genus Acanthus, one famous species of which is supposed to have given rise to the Corinthian order of architecture. It was introduced from the interior of Sierra Leone to the collection of the Earl of Derby, at Knowsley, by Mr. Whitfield, a gentleman "who made several voyages to, and journies in, Western-tropical Africa, and formed extensive collections of living plants and animals." To the services of this gentleman, Sir W. J. Hooker has dedicated the plant under consideration.

It forms a small bushy evergreen stove shrub, the spreading branches of which have rather a tortuous disposition: these branches are furnished with ovate, or oblong ovate, entire, somewhat leathery, evergreen leaves, which are situated opposite each other, and attached to the branch by a short petiole or leaf-stalk. The flowers are borne in racemes at the terminations of the branches, and are deposed opposite to each other, like the leaves; they are drooping, and furnished with coloured bracteas (floral leaves, situated at their base); from between these, the calyx or outer covering proceeds, composed of four segments, funnel shaped, and of a brick-red colour; and within this again is situated the corolla, projecting about half of its length beyond the calyx, a figure between bell-shaped, and funnel-shaped, and divided into two portions, called the upper and lower lips; the former of these is again separated into two segments, and the latter into three. These particulars will be understood by reference to the engraving.

Being a native of Sierra Leone, the principal feature of its treatment is at once pointed out as a hot and moist atmosphere, especially maintained during the period of its growth; a relaxation of these, to a certain extent, will be proper when the growth is completed, but stove-treatment will, in all cases, be required. A light, open, loamy compost, such as the bulk of stove shrubby plants delight in, will no doubt be fully suited to this; and the success of flowering it, will, no doubt, depend greatly on obtaining a free growth of young shoots early in the year, and securing the perfect ripening or maturation of this growth subsequently. In the Royal Botanic Garden, of Kew, it was in flower, in October, 1844; and the same plant was still flowering in March, 1845.

THE CULTIVATION OF ORCHIDACEOUS PLANTS.

BY JOHN HENSHALL.*

Whoever originates a work on a subject with which the world is but little acquainted, deserves our thanks, even if he does not accomplish everything at once; and the volume which has just appeared, under the above title, may be considered in the light of an original work on Orchidaceous Plants. Among the many fugitive papers which have appeared in the various periodicals, nothing like plain instructions for the management of this beautiful tribe, on scientific principles, can be gathered, and whatever may be done hereafter, the author of the treatise under notice deserves much credit. He commences his task by giving us the geographical distribution of the genus in the four quarters of the globe, with some excellent remarks on the effect of climate, and the necessity of knowing not only the latitude and longitude of a plant's habitation, but the height above the level of the sea, describing some of the principal European, Asiatic, African, and American genera. Next we have remarks on the advantage, we might almost say the necessity, of two houses for their cultivation. From this he proceeds to inform us of the effects of heat and moisture, and the necessity of regulating them according to circumstances. Then comes a chapter on light, and its operations on plants; and lastly, some practical hints on the construction of houses. These form what may be called the first section of the work. We next have notices of a hundred and eleven genera, with practical instructions for their culture, under all the varied circumstances to which gardeners are subject, and showing how much has been left undone that ought to have been done with many of the genera which have been ill-managed, or not managed at all. A chapter on the destruction of injurious insects follows, and the work closes with a catalogue of Orchidaceous Plants. Of the manner in which the work has been done we shall give some idea, by quoting a portion from the chapter on the Geographical Distribution, chosing Europe as the most interesting to us :—

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* A Practical Treatise on the Cultivation of Orchidaceous Plants, with remarks on their Geographical Distribution, and a select Catalogue of the best kinds in Cultivation. By John Henshall. London: Groombridge, Paternoster Row.

"In Europe the distribution of these plants is very limited, the character of the climate, receding from the temperate to the frigid zone, prevents the spread of more than the little terrestrial kinds which are indigenous, and these undoubtedly owe their existence to the curious and admirably adapted magazine of vital power which they possess, provided them by nature in the form of fleshy tuberous roots, into which the energy of the plant seems to retire as it were to a citadel to await and repel the attack of winter.

"They affect, for the most part, situations sheltered from cold winds and the mid-day sun, such as is usually found on the south-eastern side of woods and pastures, generally preferring a calcareous soil, or otherwise one rich in carbonic matter.

"As the present treatise professes only the cultivation of the exotic species, I content myself with an enumeration of the principal indigenous species, appending an outline of the treatment likely to produce successful management.

"BRITISH SPECIES.

"The genus *Neottia* is extensively distributed—the majority of its species extending throughout Europe; others are found in the West Indies, in Nepal, New Holland, and China, though only two of them are strictly indigenous; these are *spiralis* and *nidus avis* (the birds' nest plant).

"The genus *Listeria* comprises only two species ; these are both natives of Britain, and are rather inconspicuous.

"*Spiranthes*. This genus extends over nearly the same latitudes that *Neottia* affects, and is usually found growing under the same circumstances. *Æstivalis* (ladies' tresses) is the only British species.

"*Orchis*. This is the most extensive genus in a numerical consideration : of the whole family inhabiting our temperate zone, the chief part are found in England, luxuriating in marshy woods or open calcareous soils ; other species are scattered throughout the whole of Europe, though but few of them are worth the culturist's care : the species *maculata* is the best known, and perhaps the most deserving.

"*Epipactis* is entirely a British genus, curious and pleasing plants, of easier culture than most others ; they are found for the most part in damp woods, which circumstance points to their proper treatment when in an artificial state.

"*Corallarrhiza*. A small genus, found only in Scotland ; it is not remarkable either in form or colour.

"The genus *Nigritella* has only one species *(angustifolia)* which is at present known, and that is a native of Austria; it has dark crimson flowers.

"*Ophrys*. This is beyond question the most interesting section of the whole group ; it occupies a prominent position in the flora of all European countries, and is well deserving all the attention necessary to its successful culture *Apifera* (the bee); *tenthredinefera* (the sawfly); *aranifera* (the spider); and *mascifera* (the fly orchis,) are well known and deservedly admired.

"*Gymnadenia*. Four species of this genus are found in Europe, and some botanists mention a fifth; and an additional one is found in Canada. *Viridis* is the most common of the British kinds, but, from the colour of its flowers (green), is not a favourite.

"*Aceras*. A small genus, very difficult to manage: there are but two species—the one, *anthropophora* (green man), is widely disseminated, being present in most places favourable to its growth throughout Europe: the other, *secundiflora* has violet-coloured flowers, and is found only in the south of Europe.

"*Cypripedium*. *Calceolus* is the only member of this genus that can be considered as belonging to this section of the work ; it is a native of Britain, and for singularity in form, and richness in colouring, may vie with the best; yet, notwithstanding these inducements to its culture, it is extremely scarce, seldom indeed being seen under cultivation in aught but an enervated or perhaps starving condition.

"*Platanthera*. This genus possesses only one European species, *bifolia* (two leaved), an inhabitant of British woods: this is the common butterfly orchis; the flowers are white, and very interesting ; the genus is composed of this and two other species, but they are natives of Canada.

"Having thus briefly glanced at the leading genera of the European division of these plants, without pretending to any analysis of them, I may remark, they have hitherto been found difficult to preserve in anything like their natural vigour; this diminution of energy in all probability arising from an excess of care.

"Should, however, any one feel desirous of attempting the culture of British Orchideæ as a first step, it would be well to inquire as to the character of the localities from which they are derived; for many of them, especially those from a chalky district, refuse to vegetate, unless supplied with their accustomed food. In these cases, and indeed in all where practicable, it is advisable to assimilate the artificial treatment as nearly as possible in every particular, but more so with the soil, to their natural position; they generally succeed moderately well under the management usual for half-hardy plants, keeping them in a cold frame, with protection from heavy rains and severe frosts, through the winter, and the scorching influence of the sun's rays during summer."

The author's mode of treating each genera, or each division, for it must be observed that many require the same treatment, and several are included in the same chapter, is described in a plain, understandable manner, and sufficiently in detail to make a novice acquainted with the proper method; and here he has avoided those technicalities which almost obscure the meaning of one half the authors of the day. There is no attempt to show off scientific attainments; no waste words, and, which is better still for the young practitioner, no hard ones. We do not know that we could do better than quote the chapter on the genus Cattleya, one of the most beautiful of the whole family of Orchidaceæ:—

THE GENUS CATTLEYA.

"Cattleyas are, beyond question, among the finest of Orchideæ: their flowers are generally large and splendidly shaded with various hues. They are inhabitants of South America, luxuriating in places possessing a temperature of 60° to 70°, and frequently damp almost to excess; the rains in such situations being very heavy at certain times; but under artificial treatment less water is required, and while resting very little indeed will suffice, neither should they be allowed to make more than two growths in a year, as it causes them to become weak and not flower so fine when three growths are made in one season.

"The system that I recommend for their cultivation is in middling sized pots, as they seldom require moving; the pots should be three parts filled with broken sherds, to give a good drainage, for if that is not done the plants will soon become sickly, and from which state they seldom can be recovered.

"The mould that I prefer for them is peat, naturally mixed with sphagnum, but if this cannot be had, a little sphagnum, well chopped with it, will answer the same purpose; the peat should remain in small pieces, and a portion of potsherds be mixed with it. When potted, the plant should be about two inches above the rim, in the centre of the pot; round the outside a little rough peat should be placed, and secured down with pegs; this will keep the other mould together.

"The base of the plant, by no means, should be buried in the mould, for then water often effects a lodgement which will destroy the plant, particularly the young shoots that are just beginning to grow.

"The best time for potting I have found to be from July to the latter end of August; they are then beginning to form new roots, from the base of the young shoots: this operation should not be delayed too long for this genus, as their roots are liable to be broken by it, and a great check would thus be given to the plant; water must be given but gently at first, increasing as the plant becomes more strongly rooted: and when the plant has nearly completed its growth, the supply of moisture should be reduced by degrees until it arrives at a dormant state; very little water will then be required, as the only object then is to keep the mould from getting too dry. During their flowering season they should be removed into a cooler house, or the drawing-room, as their flowers will last longer and the colour be much finer than if allowed to remain in the growing-house, the moisture of which would cause them soon to decay, and consequently abridge the period of their beauty. The temperature most suitable to their growth is that of a cool house, such as is recommended for the North American species, and the same when at rest will suit them."

This exemplifies the author's style and mode of treatment. It would be unfair to quote more, or we should certainly like his chapter on the destruction of insects; but as we trust it will become a hand-book, and that those who possess plants will supply a copy for the use of the gardener, we shall leave them to search for that information in the volume. With regard to the select Catalogue of Plants, we observe, that it is not only more complete as a whole, than any other extant, but it is also more complete on any separate genera than any thing we have to refer to of a useful form. We have seen but one work, of a moderate size, upon the subject of Orchidaceous Plants, and that is upon too small a scale to be of any permanent use; indeed, it relates more to the means of fixing of them than to the treatment as to heat, moisture, and air, growth and rest, or any peculiar management in the blooming. Upon the whole, therefore, we congratulate the Orchidaceous Plant growers upon the acquisition of a volume which doubtless contains a good deal that they know, but which, we will engage, contains also a good deal that they do not know, and might have gone on improving for years and still not know. Those who are, and there may be such, already well-experienced in the cultivation of this beautiful family of exotics, will, perhaps, consider the thousands who are not so wise in their vocation, and who will seek with avidity for all that can be learned upon a subject of, what may be fairly called, modern introduction, but which seems, by its magnificent and extraordinary flowers, to be usurping the places of many previously favourite Stove-plants.

THE LADY'S COUNTRY COMPANION.*

Mrs. Loudon is following the example of industry so ably set by her late husband; and, in addition to her numerous works on Gardening, in its varied forms, we have now a thorough domestic volume, including advice and instruction in all the duties and recreations of a country gentlewoman. These are arranged in a series of letters to a young friend about to be married, when they commence, and of these letters many are easy, natural, unstudied, and interesting. The first is a mere introduction, in which the authoress, like a good counsel, states the case, which is simply that, as her friend is going to be married to a country gentleman, she ought to learn how to enjoy a country life, and that the authoress is about to teach her, Mrs. Loudon, exemplifying in her own person and books—a conclusion to which most rational men have arrived—that the best instructor of females is woman; and especially when the instructions are founded on what the teacher has experienced. And well does the authoress prepare her pupil (no ideal person) for the reception of her lessons, by mentioning the difficulties encountered in early life, under somewhat similar circumstances,—

"I was then," says Mrs. Loudon, "young and thoughtless; I had no sisters; and having, like you, been brought up in a town, I had no ideas of the country but as a place where eggs, cream, and fruit were in abundance; where I might keep as much poultry as I liked; and where there were shady lanes, and green fields abounding with pretty flowers.

"The place we went to live at had a good house, commanding a splendid view; an excellent garden; three fish-ponds, and about thirty acres of grass land, which enabled us to keep cows and horses, without troubling us with any of the laborious duties of cultivating arable land.

"At first I was enchanted with the change. I was never tired of feeding my poultry watching the dairy-maid, and managing the fruit and flowers; but, alas! I soon found that there are few roses without thorns. My first trouble was three gentlemen calling on us one day unexpectedly, and my father asking them to stay dinner. We were seven miles from the town where we had formerly lived; and, though there was a small town within two miles of us, the road was bad, and the miles very long ones; while the town itself, when we reached it, was one of those provoking places the shopkeepers of which never have what is wanted, though they always say they had abundance of the required article the week before, and believe they shall have it again the week after. I need not enter into the details of my troubles in preparing for this well-remembered dinner. Meat was out of the question; and though I was enabled, by having recourse to the poultry-yard and the dovecot, to give my father's friends enough to eat, no one but a young housekeeper in a similar situation can have any idea of what I suffered. The lesson, however, was not lost upon me; and you may easily imagine that ever afterwards I took care to have a cooked piece of hung beef, or ham, or some similar substantial article of food in the house, that I might be provided for a similar occurrence.

"The recollection of what I underwent while buying my experience makes me anxious to spare you, my dear Annie, the pain of a similar ordeal; particularly as it is more disagreeable for a young newly-married woman to feel in housekeeping difficulties than a single one; as it makes you fear your husband had a higher opinion of you than you deserve. In your situation the difficulty is increased by your husband not having lived at the Manor-House since the death of his parents, when he was only ten years old; so that he can have no idea of the petty troubles you will be exposed to. Under these circumstances I will do my best to clear the path that lies before you, and to teach you how to enjoy rationally a country life."

The authoress first sets about advising an alteration in the house and grounds, and how to set about it. This we will not enter into further, than to observe, that the sketches of "The Manor-House," as it was, and as it is, give some evidence of taste. The work is interspersed with numerous recipes; and we stop at page 27 to quote one that must interest every lover of cut flowers. The experiment may be tried at home first, because, if an exhibitor were to apply it to the flowers he is going to exhibit, he might find, like a Cambridge friend of ours, that his flowers were spoiled when he reached the end of his journey; perhaps his instructions were not so complete as those of Mrs. Loudon, who writes to her fair pupil,—

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* The Lady's Country Companion; or, How to Enjoy a Country Life Rationally. By Mrs. Loudon. London: Longman and Co.

"As you are fond of having flowers in your room, and as your present garden is so far from your house, you will perhaps be glad to know how to preserve cut flowers as long as possible. The most simple rules are, not to put too many flowers in a glass, to change the water every morning, and to remove every decayed leaf as soon as it appears, cutting off the end of the stems occasionally, as soon as they show any symptoms of decay. A more efficacious way, however, is to put nitrate of soda in the water; as about as much as can be easily taken up between the forefinger and the thumb, put into the glass every time the water is changed, will preserve cut flowers in all their beauty for above a fortnight. Nitrate of potash (that is, common saltpetre) in powder has nearly the same effect, but it is not quite so efficacious."

Mrs. Loudon does not forget the creature comforts, and she is certainly no teetotaller. We have recipes for brewing and making wines; making and baking bread, cakes, and biscuits. Cooking forms no unimportant feature in the volume; and the dairy is an object of peculiar care. In gardening there are all the necessary directions, and they are pretty well given; not that we agree with the choice of favourite subjects on all occasions,—two of a trade never agree. At page 131 we have the plan of a flower-bed. It is only necessary to say this consists of twelve beds, radiating from an oval centre, and by elongation of some, continuing that figure on the outside. Our objections to the plan may be summed up in a sentence,—we must have uniformity. Nevertheless, as there are some who care nothing about this, we give Mrs. Loudon's directions for planting them out:—

"I will now tell you how I would plant the beds. As this is the beginning of April, I would advise you to get a few pots of Californian and other annuals, usually raised in pots, from the nurseryman at the neighbouring town, and to plant them, putting three potfuls in each bed, but no more. In No. 1. put Phlox Drummondi, the flowers of which are crimson of various shades, and let the stems be pegged down, so as to spread over the bed. No. 2. may be Lasthenia californica, the flowers of which are yellow, and the stems generally procumbent; but they may be pegged down to keep them in their proper places, that is, to spread completely and regularly over the bed. No. 3. should be Nemophila insignis, the flowers of which are of a beautiful blue, and which will not require pegging down. No. 4. may be Erysimum Petrowskianum, the flowers of which are of a bright orange, but the stems must be pegged down, or they will grow tall and straggling. No. 5. may be Nolana atriplicifolia, the flowers of which are blue, and resemble those of a convolvulus; this is a procumbent plant, and will not require pegging. No. 6. may be Nemophila atomaria, which has white flowers, and is a dwarf plant. No. 7. may be Leptosiphon densiflorus, a dwarf plant, with pale purple flowers. No. 8. may be Gilia bicolor, a dwarf plant, with nearly white flowers. No. 9. may be Clintonia pulchella, a beautiful little plant with blue flowers. No. 10. may be Gilia tricolor, a dwarf plant, the flowers of which are white and very dark purple. No. 11. may be Leptosiphon androsaceus, a dwarf plant, with pale lilac flowers: and No. 12. Schizopetalon Walkeri, the flowers of which are white, and the stems must be pegged down. These are all annuals, which, if properly treated by pegging down, and not planted too close, will produce a mass of flowers in each bed only just above the surface, and will have a very pretty effect from the windows. Most of them like a poor clayey soil best, and they will only require turning out of the pots without breaking the ball, into the places prepared for them.

"If you think there are too many white beds, you can substitute Sanvitalia procumbens, the flowers of which are yellow, for No. 8. but the seeds must have been sown the previous autumn to bring it forward, as otherwise it will not flower till late in the summer; and Bartonia aurea, the flowers of which are of a golden yellow, may be planted instead of No. 12. Cladanthus arabicus, formerly called Anthemis arabica, which has yellow flowers, may be planted in No. 8, if Sanvitalia cannot be obtained."

Mrs. Loudon's list of half-hardy plants will not occupy much room, and there is no disputing the fact that the majority are very pretty subjects; and to this we may add bulbs, and early subjects for spring. However, we shall quote the authoress's own words:—

"I shall now give you a list of half-hardy plants for autumn, as most of the annuals will begin to look shabby in July, or the beginning of August. No. 1. Verbena Melindres, bright scarlet; No. 2. Œnothera Drummondi, yellow; No. 3. Lobelia bicolor, blue; No. 4. Calceolaria rugosa, pegged down; No. 5. Verbena Tweediana, crimson; No. 6. common White Petunia; No. 7. Verbena Arraniana, or Henderson's purple; No. 8. Calceolaria integrifolia, yellow; No. 9. Purple Petunia; No. 10. Verbena teucrioides, white; No. 11. Frogmore Pelargonium, bright scarlet; No. 12. Musk plant, yellow.

"In October the following bulbs and other plants may be put in for flowering in early spring. No. 1. Von Thol Tulips; No. 2. Cloth of Gold, or common Yellow Crocuses; No. 3. Blue Hepatica; No. 4. Yellow Crocuses, or White Anemone; No. 5. Scilla verna and sibirica, blue; No. 6. Arabis albida, white; No. 7. Double Pink Hepatica; No. 8. Winter Aconite; No. 9. Purple Crocuses; No. 10. Snowdrops; No. 11. Primroses; No. 12. White Hepatica, or Arabis alpina."

For the present we shall close, though there are some excellent domestic recipes, which we may hereafter quote; and, in the mean time, we may safely recommend Mrs. Loudon's work to our lady readers as a most useful country companion, with an assurance that they may safely commit themselves to Mrs. Loudon's keeping.

THE GORGEOUS TULIP BED.

How often has it been inquired, why are not Tulips cultivated by the rich? The answers might be numerous. It is certain that the nobility and gentry visit Tulip-beds, and greatly admire them, yet make no advance towards procuring one. When we find that many have expended from 500*l*. to, perhaps, as many thousands, to secure a noble bed, and notice, too, that there are persons who, probably, have not half as much disposable funds to call their own, it seems absurd to say that expense would prevent the wealthy from growing Tulips; and yet, again, we find hundreds of persons extravagant in one thing that takes their fancy, and parsimonious in almost everything else. The effect of a bed of Tulips, when in full bloom, is one of the most striking in the whole host of garden attractions. Individuals, who can hardly say too much against the flower, in its isolated state, no sooner obtain sight of a bed, than they are lost in astonishment; yet the rich, who can best afford to have such an addition to their garden, look on it as a troublesome, short-lived subject, not worth their notice, except to view at other people's expense. We are, of course, obliged to make exceptions, for there are some who may fairly be reckoned among the wealthy, and who delight in promoting that branch of Floriculture; persons who not only grow a magnificent bed, but who add to it, every season, something or other, from different collections, to increase the attraction. Still, considering the number of garden establishments conducted, in other respects, in an expensive manner, it is extraordinary that there are not more Tulip-beds among the rich. We have heard many reasons given, but one of the most general, and, as we think, most correct, is that the gardeners—albeit very good men at ordinary subjects—know so little about the superior order of flowers, as to discourage any attempt to introduce them. It was, however, the same with Pansies, Carnations, Piccotees, Roses (except the common ones), Pinks, and Dahlias, until these gentlemen gardeners saw all the little amateurs growing them well, and then their spirit was roused, so that, one at a time, nearly all these things are rapidly occupying their several spaces in the principal establishments, if not at the expense of their parsimonious owners, at the cost of the gardener himself. But the first cost of a bed of Tulips is a serious expense. A hundred pounds would go but a small way in procuring right good flowers. Yet it is not long since we saw an advertisement, in which some one offered to sell a finely-arranged bed of fifty rows for fifty pounds. This would hurt nobody who has an establishment worth the name; and if the flowers were well chosen by the dealer, they would form a very beautiful object; but, of course, a hundred rows would be better, and the hundred pounds might be exceedingly well laid out. The breaking up of one splendid collection ought always to produce the formation of another; for, although there are some old and well-supplied Tulip-fanciers, who always determine to pick up certain objects of interest, the main body of a splendid collection, which, forced by circumstances into the market, brings but little, ought to tempt some spirited amateur to begin, by securing, in effect, all he wants at a fourth of what he must pay if he were to order them of dealers in full trade. But where one Tulip-grower arises out of the ranks of the rich, fifty come out of the ranks of the middling and humbler classes, who seem to be embued with floral taste, and to participate in the general enthusiasm. To these do we owe most of the improvements effected in our leading Florists' flowers; and the Spitalfields weaver may boast, fairly, that his humble class has done more for Floriculture than all the rich people in the kingdom, if not in the world. Not that we would deny the claims of Botanical collectors; for they supply us with the ground-work, —the material for manufacturing the better varieties. The Tulip has been grown for years, among a class of men, some of whom have not, besides their Tulip-beds, fifty pounds in the world, and yet their beds of Tulips have cost them some hundreds of pounds. They consider it a necessary object to their happiness, and although much may be said against what, to some, may seem an improvident expenditure, much worse may be done with money; and if their families are unable to continue the enjoyment of it, after the head has been removed, they may dispose of it for a much larger sum than ever would have been saved, had the Tulips not been cultivated.

The Queen grows a handsome bed of Tulips, presented to the Queen Dowager, while Queen of England, but the bed is capable of great improvement, and it is to be hoped such an example will be made. The new gardens at Frogmore would be worthy of a first-rate collection, and there should not be wanting the means of making it so. When we consider the thousands of pounds that have been expended on that garden, and the fact that for many years—nay, we may say centuries—that the Dutch beat us in Tulips; and, moreover, that the encouragement given by various societies, excited an emulation which has resulted in our beating the whole world in that splendid flower, there should be a kind of national feeling with regard to it. There does not seem to be anything unreasonable in a wish that the management of the Royal Gardens should take it up as a point of national importance. Mr. Ingram, the gardener at Frogmore, had the care of the bed in the Castle Gardens, and whether it be still grown there, or in the new establishment, we may be permitted to hint, that it would not be derogatory to either, to improve the bed by the addition of all the flowers raised in England, that may be fairly placed among the best of their day. It contributed in no small amount to the success of English growers, when the late Queen, now Queen Dowager, thought it worthy of her Royal bounty, to give a ten guinea plate annually to a Tulip Show in the neighbourhood of Bushy; and we feel quite assured that her present Majesty, upon a proper application, would continue that encouragement. Nor is it at all too much to expect, that it would stimulate the rising generation, the young cultivators of the Tulip, to great exertions to keep the English Tulip-growers in advance of the Hollanders. Besides this, we feel confident, that if it were once seen that Tulips were grown in collections as well as they could be grown at the Royal Gardens, it would induce many of the nobility and gentry to take up the subject, and enrich their grounds with a bed worthy of their several establishments. These things are well worthy the consideration of whoever may happen, at this time, to have the superintendence and control of the gardens at Windsor and Frogmore; for, whenever the national pride is excited to rival foreigners, it is by no means too much to look for countenance from the Crown; more particularly as, when her late Majesty, now Queen Dowager, had done so much, by a donation of 10*l.*, for the honour of winning which so many competed.

PINE-APPLES FROM SUCKERS.

It is the ordinary practice to remove the suckers from Pine plants as soon as they are large enough. To strike them, grow them up to a proper size, disroot them, repot them again, and grow them up to fruit, all of which takes mostly eighteen months. It has been, however, recommended of late, and, among others, we believe, by Mr. Hamilton, whose treatise on the Pine and Cucumber has been some time before the public, to leave the suckers on the old roots, to plant them down low enough to have the base of the sucker under the surface, and to grow them on as fast as they can be grown without disturbing the old root at all. We have seen this system in practice, and so far as the experiments were tried in one establishment, it answered perfectly. When it happened that there were two suckers on a plant, one took the lead a little; but, in general, though one fruit preceded the other a trifle, both the fruits were as fine as that had been from the parent plant. When there happened to be but one sucker, the plant advanced more rapidly, and the fruit came earlier; but so far as experience went in this establishment, the period of fruiting was hastened variously from three to six months, which is the greatest object in the growth of a fruit that has to be kept in high temperature. If the firing of a house full of pines could be saved for three to six months, it would form no small difference in the item of coals; and the saving of labour is not much less important. The first consideration, then, is, when the fruit is cut, to get a deeper, larger pot; put in the plant, without disturbing the roots, some such depth as will place the base of the sucker under the soil, the object of which is, that it may strike root, as well as derive nourishment from the parent; treat it then in all respects as you would other plants, growing it as fast as you can. The bloom will rise long before it would had it been taken off to strike; and though the roots from the sucker may fill the pot, it is not the more to be detached from the parent on that account. Let them grow together until the fruit is fit to cut, and, if other suckers rise, treat them the same. All the time that a sucker is striking root, and getting root sufficient to carry on its growth, is entirely saved; and in families where fruit of all sizes and seasons are acceptable, it is of the greatest possible advantage. If the sucker is not sunk down below the soil, so as to strike root, the fruit comes smaller; but if it be sunk, it continues growing well from the nourishment afforded by the parent all the while it is striking and making root, which is two or three months always, and sometimes more than three or four. The plan is being adopted now in most places when there is a strong healthy sucker on the plant. Where they are weak, they want the nourishment of the parent more, not less, and it should be adopted when size and season are no object.

ARCTOSTAPHYLOS NITIDA.

(*Bentham.*)

THE SHINING-LEAVED BEARBERRY.

Besides the true heaths, and the showy families of the Rhododendron tribe of the same natural order (Ericaceæ), there are others very nearly related to them, of great beauty and value as evergreen shrubs. We allude especially to the family of Arbutus, and also to the various genera which will be sufficiently understood by making use simply of the typical name of Andromeda. The flowers of most of these are pitcher shaped; that is, subglobose, or swollen near the base, above contracted to a very narrow neck, beyond which are five little pointed segments, spreading outwards, and often recurved. A great number of these produce white blossoms: some, however, are slightly and delicately coloured.

The Arbutus is well known, with its evergreen, shining leaves, and little bunches of greenish white flowers, succeeded by handsome scarlet berries, resembling strawberries, and hence the popular name of Strawberry-tree has been applied to the Arbutus. Allied to these, in the general features of their growth, are some half-hardy plants from Mexico, of considerable beauty, one of which, the subject of the present notice, unites the foliage and habits of the Arbutus with the branched spikes of inflorescence borne by some of the Andromedas.—Leucothoë floribunda (formerly known as an Andromeda) may be instanced as illustrating this branching of the flower-spike.

Arctostaphylos nitida, is an evergreen shrubby plant, with oblong lanceolate saw-edged leaves, of a shining and rather greyish green colour; the habit of the plant is erect, growing from four to six feet high; and the branching racemes of flowers, white, pitcher-shaped, and drooping, are produced from the ends of the branches. These flowers are produced in May, and sometimes again in the autumn. The plant has been introduced to our gardens from the mountains called Carmen, and other places in Mexico.

Unfortunately this fine plant is not hardy, and therefore its interest and beauty will be unavailable to many. In the mild and genial climate of Cornwall, and of Devonshire, and probably in some parts of Ireland, it might succeed pretty well, in mild winters; but near London, and in other parts of Great Britain, it would not succeed without protection. It is an admirable plant, in connexion with the Berberries noticed in a former page for planting against conservative walls. A good loamy soil is suitable for it.

GROWING, SHOWING, AND SHADING THE DAHLIA.

So many contrivances have been invented for growing these gaudy flowers, that we shall hardly be thanked for disputing the propriety of covering at all against the sun, the wet, or the cold. We do not dispute that the covering from the sun and air and rain brings some flowers larger and more perfect, but it also changes the colour, or rather, makes the flower come a different colour from any that have all the air; and, strange to say, one grown without artificial shading, but grown on the shady side of the plant, will travel infinitely better than any that have been subjected to the treatment which has, perhaps, become almost universal, but which, nevertheless, takes from the brilliancy and permanence of the bloom. One great temptation to cover with pots and glasses is, perhaps, to defeat the earwigs; but that which is efficacious in shutting them out, shuts out the air, and when covered with an opaque cover, the light also. Now, either of these deprivations alters the very texture of the flower, and takes from its brightness and general character. We have had spring shades made, which have been useful, without this evil; and the only fault we find with them, is, that they were nearer to the flower than was desirable. This must be obviated by the shade being larger. But there is a notion among cultivators, that covering with pots brings up a hard eye better than when there is light. Others, who think light indispensable at times, have a cover, like a pot with the bottom out, and put glass on it, which, they consider, draws up the centre still better. What really conduces, however, to develop the centre petals is warmth, or rather even temperature, and this is secured by the ordinary flower-pot, which keeps off the wind and sun by day, and the chilly air of night. The disadvantage attending all this is, that a dirty white becomes a clean white, and is, therefore, shown artificially; a yellow becomes lighter; a purple or scarlet less brilliant; a rose or crimson comes paler; spotted and edged flowers lose their marks a good deal, and the stand formed with such flowers loses its brilliancy altogether. It is idleness alone that causes the earwigs to beat us; a want of early and incessant attention, which a boy could supply, so that we have no sympathy for people who pretend they must cover the Dahlia from them. If there must be artificial means, they ought to be used with some judgment. If we consider that the regulation of the temperature by covering increases the size of the flower, the means ought never to be applied to large flowers. Cleopatra last season was always shown large; and the larger it was, the more faulty it was; while the smaller blooms were almost perfect models. We should unquestionably grow this without depriving it of its air and light, and if we shaded it at all, it should be with a distant shade. It cannot want any management with respect to its centre, for we have not a better eye in the whole family, nor one shown so often in a perfect state. There is no excuse, then, for covering it to bring up the centre. The colour is paler than some of the yellows, but we doubt if we saw a natural bloom last season; and covering the light from a yellow flower will always make it a dip or two lighter. Upon the whole, we can hardly bring ourselves to agree with the very artificial mode of blooming Dahlias for show, and we have not much faith in the efficacy as to the bringing up of the centre. Of a hundred blooms of Dodd's-yellow, shown last season, not five had the centre at all well up, and not one quite perfect. It is the nature of deeply-cupped flowers to have bad centres, and the best are always those which are moderately-cupped, or not cupped at all. Take Essex-triumph for a good centre; coarse as the flower is, there is never any deficiency in the eye; and if the whole list of varieties are examined, it will be found the same. Standard-of-perfection is difficult to show with a good centre, but its other points are like Dodd's-yellow, unexceptionable; still there is a charm about perfect symmetry on the face of a flower and the eye which it is difficult to pass by. Some of our very knowing growers—people more cunning than the rest—discover that Cleopatra "is no use"—that is the favourite term. Now, it does so happen that those who do not grow Cleopatra lose one certain bloom, which, like the Essex-triumph, is never, perhaps, a great star in a stand, but always a sound, useful, and often an indispensable flower; for unless growers happen to have a fine bloom of Admiral Stopford, they often want the Triumph among twelve, but in twenty-four they want it even if they have Stopford; and so with regard to Cleopatra, those who have it not will lose a certainty of a useful flower, which no yellow can touch once in a score times, and they will repent when too late to repair the error; for June is late for planting out, except for the late shows. Let those, however, who grow two plants, grow one without shading, and we shall see what they can do best with. Lady Sale is one of these flowers which we pronounce will be literally good for nothing, if its character be destroyed by growing it in the dark. The bright yellow will turn straw-colour, and the red edge will, for the most part, disappear, or turn a cloudy brown; in which state it will hurt, instead of help, a stand, and damage the credit of the flower itself. Hudson's Princess Royal, one of the most beautiful when in perfection, has been shown these three seasons out of character, so much so, that the colours cannot be recognised; and, except by those who know every variety by its form and general features, even while out of character, the flower could not be known as the same that was shown as a seedling in such fine order. It is now shown almost waxy white in the ground, and the tips are pale and uninteresting, and this arises solely from growing it in the dark. Ansell's Unique is almost lost sight of from the same cause. The tip, which gave it a decided lift in the scale of Dahlias, has been lost, as it has been shown since shading deeply has been resorted to, like a yellow, and little bits of smudge here and there,—which is all that has been seen of its tip,—have been just sufficient to make it a dirty self, instead of a clean tipped flower. We regret that florists can never do anything in moderation. Because one thing does better covered, they jump at the conclusion that all things will: and as soon as Roses are shown in stands and single blooms, like Dahlias, there will, no doubt, be plenty who will conclude that, as some Dahlias do better for shading, Roses must also. We could go through the popular flowers of the day, and show that many are not shown in their natural character through this pot-covering system, and that the flowers are thereby destroyed in quality. Many which have white grounds, and purple or rose edgings or tips, are equally damaged by close covering, and the marks are indistinct and less vivid for it; but, if there were nothing else, the flowers that are openly grown, will last a week longer in perfection than those which have been nursed under the various contrivances for increasing the size, and, as the growers erroneously conclude, perfecting the centre.

We have, however, said enough for the present to direct the attention of Dahlia growers to the subject.

THE HORTICULTURAL SOCIETY OF LONDON.

Final Exhibition for 1845.

The May show was upon a larger scale than any we remember, chiefly owing to the unwieldy size of many specimens which ought never to have left the conservatories in which they had been grown. In the winning collection there was a common Acacia alata of enormous dimensions; Citissus racemosus, which is a rapidly growing plant, much about the same size; and the old Azaleas, indica, alba, and Phœnicea, which are completely thrown in the shade by the new ones, lateritia, variegata, Gladstonesii, and others so infinitely superior, were of large size. Pimelea spectabilis, and three Ereostemons, were the best plants in the collection, if we except some Ericas, of which the best was E. depressa. The next collection in the scale of winners, and which ought to have stood first for the value, the condition, and rarity of the plants, as well as the exhibition of skill, contained specimens of rather less size:—A plant of Daviesia saligna, nearly five feet high, and more than five feet through. Erica grandinosa, Oxylobium Pultenæa, Aphelexis (Helichrysum) humilis, and others of enormous size, and a perfect mass of flowers, were specimens of skill not often met with. Pimelea Hendersonii was perhaps as fine a specimen as there is in the kingdom. Many plants of extraordinary growth graced this collection, which was certainly never equalled at that or even any former exhibitions.

Among nurserymen, Mr. Frazer, of the Lea Bridge Road, has so completely taken the lead, that no one stands the slightest chance with him. Among his plants there were some beyond all praise. Pimelea linifolia and Pimelea spectabilis were grand indeed. Podolobium staurophyllum, and Polygala acuminata, were good; but the crack plants of his collection were perfect specimens of first-rate plant growing,—Boronia serrulata and Chorozema Henchmanni, whose colour was exquisite, though perhaps, without exception, the most difficult of all plants to grow to any size of a good colour. Most of the collections, large and small, contained nearly similar plants. Mr. Bruce showed Azalea Gladstonesii and variegata, very fine. Mr. Epps, of Maidstone, showed Leschenaultia formosa, very finely grown. Ixora grandiflora, and Erica Hartnelli, in excellent condition. From these rough sketches of the best plants, it will be seen there was little or no novelty in the collections. In orchideous plants, there was not much to boast as to quantity, but there were some superb specimens. J. J. Blandy, Esq., sent a specimen of Saccolabium guttatum, in a wire basket, nine feet in circumference; from this plant, the grand and numerous spikes of flowers, like plumes of rich rosy feathers, hung, or rather lay, on a bank of moss.

From the Botanic Garden, Birmingham, was sent a Chilian plant of great rarity, said to be never before bloomed in this country, called Chloræa chrysantha, with yellow flowers, and the habit of an orchideous plant. Sobralia macrantha, a very grand orchideous plant, and Vanda teres, so seldom seen in flower, were shown by Mr. Rucker, with many beautiful, but more familiar subjects. C. B. Warner, Esq., of Hoddesdon, showed a new species of Oncidium, something like O. papilio, but fringed, and some others. Messrs Veitch, of Exeter, exhibited some fine orchideous plants, especially Cattleya Mossiæ, in fine order. Sir George Larpent sent Vanda Roxburghi, and V. R. cœrulea, very interesting plants. J. Schroder, Esq., showed Vanda cristata. The Azaleas were very finely grown, but except the new, close, and round flowering ones, they possessed no interest. Mr. Smith, of Norbiton, had some double purple and some double pink, but of no form. Knight and Co. showed one called Exquisita, one of the light grounds, after the fashion of Glandstonesii, and, if it be sufficiently distinct, it is an acquisition. Mr. Cole sent a plant of Brugmansia Knightii, which is a double variety of the old Datura arboria, or Brugmansia suaveolens, and a much more rich looking plant, in every way better. The tube is somewhat longer, and the habit decidedly better; but, of course, botanists object to it because it is double, upon the same principle, and with as much sense, as they did to the double Dahlias, until they bore down all before them. A new Syphocampylus, exhibited by Messrs. Veitch, with rich scarlet flowers, and of a fine shrubby habit, attracted great attention; and Crotolaria elegans was shown by E. Wigram, Esq., a pretty pea-flowering plant, but of rather weedy appearance. Mrs. Lawrence showed a plant of Daviesiæ cordifolia, a straggling specimen, that may perhaps be grown better hereafter. Tropæolum Lobbii, already noticed at the Royal Botanic Gardens, and Franciscea pohliana, were sent by Messrs. Veitch. Mr. Pawley exhibited plants of Stephenotus floribunda, one of which was better bloomed than it has ever been seen before in this country, and Mrs. Lawrence exhibited one of enormous size, but with scarcely half as many flowers. This is a fine evergreen plant, of the climbing kind, with bunches of large white, highly-fragrant flowers.

Roses were plentiful, but, as usual, sadly ragged. Mr. Ayres, however, showed a cut specimen of Cloth of Gold, a fragrant yellow variety.

The following subjects were also among the novelites:—

Pelargoniums.—Rosy Circle and Arabella, blotched rosy varieties, with whitish centres, above the average quality, shown by Mr. Beck. Pearl, a white variety, of no great pretensions, shown by Mr. Catleugh. Mount Etna, a brilliant red flower, and Isabella, a flower of a maroon purple caste, were shown by Mr. Hoyle, and attracted great notice.

Cinerarias.—Generally very poor; the only one noticed was a rosy-purple, one of Smith's, of Pimlico.

Calceolarias.—The only one noticed was Exemplar, shown by Mr. Kingham, of Twickenham.

THE ROYAL BOTANIC SOCIETY.

Second Exhibition for 1845.

We have not space to enlarge on the general features of this Exhibition; but, following our usual plan, shall confine our notices to some of the best new plants and seedlings exhibited.

Vesalia floribunda.—The finest new plant present was one called Vesalia floribunda, of which the Exeter nurserymen, Messrs. Lucombe, Pince, and Co., and Messrs. Veitch, had each a plant; it is a compact, bushy growing, shrubby plant, with dark-coloured oval leaves, which are arranged in pairs opposite each other on the stem, and from the axils of which are produced long tubular flowers, two inches or more in length, and divided at the end into five large spreading segments; they are of a beautiful delicate rose colour, with a purple tinge, and hang pendent. These seem to be abundantly produced, and give the plant an exceedingly pretty appearance. We presume it requires the temperature of a warm green-house.

Siphocampylus, nova sp.—This was shown by Messrs. Veitch. It is a handsome plant, native of Brazil, of dwarf habit, bearing cordate leaves, and brilliant crimson-scarlet flowers of intense colouring, a good deal resembling some of the high-coloured Gesneras, or the Salvias. It is, of course, a stove-plant; and, if found to flower freely, will be a fine and useful plant. It was also shown at the *fête* at Chiswick.

Fuchsia serratifolia.—A handsome large growing species, with reddish-tinged oval-lanceolate leaves, generally produced in whorls of three or four; from each axil one flower proceeds; these are large, the tube faint rosy-pink, the sepals tipped with bright green, and the petals vermilion-coloured. Its character is novel, and altogether it is a handsome plant. It is one of the large growing kinds, and the leaves and flowers are of proportionate size. It is from Peru; and requires the treatment of F. corymbiflora.

Burtonia bruniodes.—A little pea-flowered bush, from Messrs. Lucombe, Pince, and Co. The leaves linear, and quite woolly; and the flowers are produced at the tips of the shoots in small heads or clusters; they are yellow, and the plant is moderately showy. Probably from New Holland: it will at least class with New Holland plants.

Pelargoniums.—Mr. Beck, of Isleworth, obtained prizes for several seedlings of 1844, which were grown to good sized plants, sufficient to test the character of the variety in cultivation. Prizes were given to Aurora, crimson red, the top petals covered with a dark cloud; Arabella, a large showy flower, light rose colour, with a white centre, and dark cloud on the upper petals; Rosy Circle, a smaller flower in the same way, but better; and Belloni, rose colour, with a purple tinge, and dark upper petals. Mr. Beck also showed some seedlings of the present year; Competitor, rose colour, top petals nearly black; a finely-formed flower; and Caliph, bright rosy purple, with very dark upper petals, both flowers of a good deal of promise. Others were shown, but none were possessed of any striking qualities.

Greenhouse Azaleas.—Mr. Ivery, of Betchworth, produced rosea elegans, and striata formosis luna; and Mr. Gaines, of Battersea, elegans nova, and rosea superba. None above mediocrity.

Heath.—Messrs. Lucombe and Co. had one called Erica finea major, with larger flowers than the old variety.

Cactus.—From Mr. Widnall, of Cambridge, was one called magnifica, with large deep red flowers.

Calceolarias.—Prizes were given to Mr. Kinghorn for Exemplar, crimson and yellow chequered, the former prevailing; to Mr. Garrod's Lacerta, and to Mr. Gaines' Climax and Louis Philippe, all yellow, with streaky chequered markings of brownish crimson. There were many others shown; among which were Miss Houston, yellow chequered with crimson; and Hope, tawny chequered with brown; and Symmetry, yellow, with a blotch composed of faint small dots, from Mr. Kinghorn. Fair Maid of Camden, cream colour, faintly chequered; Daniel O'Connell, yellow, faintly chequered; and Lady Platt, in the same way, from Mr. Ansell, of Camden Town. Delicate, cream colour, light chequered; Novelty, purplish rose, with dark crimson chequered marking; and Perspicua, orange, with dark crimson irregular marking, from

Mr. Gaines. Beauty of Eton, from Mr. Holder, of Eton, a novel flower, rose coloured, with a darker blotch.

Verbenas and Cinerarias.—There were no seedlings of any importance exhibited.

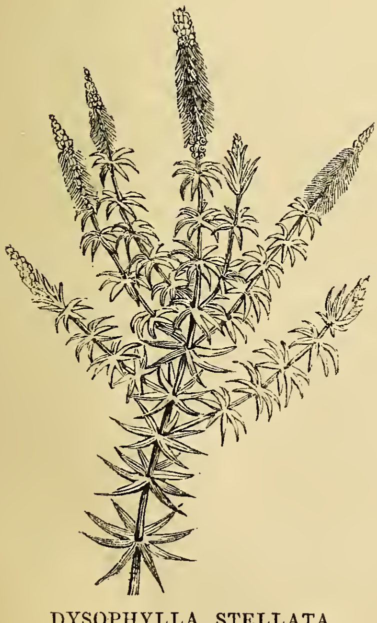
Rhododendrons.—A variety called Atropurpureum, from Mr. Bruce, of Tooting, was of a dull dark purplish rose, with a very distinct blotch of dark crimson spots on the upper petals. Speculum, Medora, and Coronet, three pink varieties, from Mr. Bunney, of Stratford; the last two were rewarded.

British Grass.—Though not showy, yet a very interesting plant, in a new kind of British Grass, was shown by Mr. T. Moore, of Camden Town, who discovered it abundantly around London in 1844. It is closely related to Glyceria fluitans, and will prove either a new species, or a very marked variety of G. fluitans.

Pansies.—Among the seedlings, were two very dark flowers, with purple eyes, from Messrs. Brown and Attwell, named Tippoo Saib, and Black Prince. Another, in the same way, from Mr. Henbury, of Croydon, was named Rajah. Earl of Zetland, of which a whole stand was shown by a Mr. Backhouse, was a very curious colour. There were several other very good flowers, but they did not strike us so forcibly as the preceding.

WINDOW GARDENING AND PLANTS IN DWELLING-HOUSES.

The period of the year when people in manufacturing towns are seeking for plants to decorate their windows having arrived, it becomes a subject worth inquiring into, whether they always choose the best, or are taken with ephemeral beauties, not likely to last long in perfection; and here perhaps we may be of service with a few hints. Of the plants likely to last any considerable time in bloom, or which, when out of bloom, form pretty objects, there are not a great many; but a little care in the selection may be of service. As to the plants people in general choose, let us notice one fact which few calculate on. The most ephemeral plants, if bought before they are fully bloomed, will last some time before the unbloomed flowers are developed; and therefore no one ought to be captivated by the beauty of a plant in full flower, be it what it may. Geraniums are general favourites. If one flower has opened, so that you can see the character of it, you need wish for no more; it is far better to have all the blooms open with you, than to pick out a full-blossomed plant, when, as soon as they fail, the plant is done. But there are many plants better than Geraniums for window gardens. Mignonette lasts a considerable time, but is not grown for its beauty. The Fuchsia ought to be in perfection a long time, but it requires the greatest care in purchasing, and managing after it is purchased. If it comes out of a warm house, the change of temperature will throw off every bloom; so will it if you make it too wet, or let it stand in a wet saucer; this indeed is the bane of almost every plant. The Cineraria is a prolific bloomer, and if you can buy them just as the first flowers are coming out, they will be in bloom for weeks. Cockscombs are lasting subjects; and Stocks, if obtained when they are first opening, will also continue a considerable time in beauty. China and other Roses will not keep in close towns, and fade almost directly they are obtained; indeed it is exceedingly difficult to keep them even in the vicinity of close manufacturing towns. The balconies of the London houses are as bare as they need be, when evergreens would form an excellent ornament; but the purchasers of evergreens at the markets have found them die off quickly, and have soon tired of buying. The fact is, that those taken to market are taken up out of the ground and stuffed into pots any how, as they are only wanted to last until they are sold; but it is the means of deterring many from buying a second time. They do not think it is the dealer's fault, but that the things will not grow in London, and that it is no use trying them again. Now, it is all but certain that plants potted up in the spring for the London market will die. Evergreens intended to live, must be well established in pots; and when that is the case, they may be grown for years in London, with only the ordinary caution of giving occasional watering, well washing the leaves, and shifting about every two years into larger pots, all three of which necessaries are completely lost sight of. The Acuba Japonica is the very best plant for London balconies; the Box next. The Rhododendron ponticum will keep some years with these precautions, but nothing will keep long in health without them. The Carnation and Piccotee will do well in the very smoke of London, if attended to as before observed with regard to washing and watering through the season of bloom; but though they might be kept, and even propagated for years, it is not worth the trouble; and they will be better changed every year, as they grow strong and push up for a strong bloom in the country, while, in London, if they had to make their growth from the beginning, they would be weak for want of pure air. The Scarlet Geranium, which continues blooming all the season, is a hardy flower for the window, and it will grow almost anywhere with care and attention; blooming, too, as every new shoot perfects itself, so that there is always flower on it, more or less. The Verbenas, though very tempting in appearance, are not good London flowers. Some of the most free, if got just to the eve of blooming in their country abode, will stand a short time flowering in a town-house, but they are soon the worse for their confinement. The best management for all these plants is to keep them, upon the whole, rather dry than otherwise; never to let them absolutely flag, but not let them be soddened with water. A small hand syringe to wash off the soot and dust occasionally, will be of great service; and they should have the air as much as possible, but not the full sun, for that would soon spoil them. The watering should always be done with river or rain-water, as pump-water deteriorates them rapidly. Whether it is the chill, or the absence of a particular nourishment which is always found in soft water, we know not, but the fact is always so, even in the country, and therefore cannot be good in London. It is better always to go to the nurseries than to the markets, for you there see everything in its natural place and state, and select those you like; but you must always remember to select those coming into flower, and not those which have arrived at perfection. The one will be getting better, and the other getting worse, from the moment you get them into your possession; and one is far more desirable than the other.



DYSOPHYLLA STELLATA,

(Bentham.)

THE STARRY DYSOPHYLL.

A VERY neat and elegant herbaceous plant, inhabiting Malabar and Mysore. The stem is erect and branching, beset at short intervals with whorls of from six to eight narrow, linear, pointed leaves; the flowers are produced in crowded spikes at the terminations of the shoots, and much resemble those of some Veronicas in their arrangement and appearance, though the plant is really more nearly allied to the mints, from which it was not originally distinguished.

It is a very delicate and elegant plant, growing scarcely a foot high, and flowering in October: a specimen grown in the garden of the Right Honourable the Earl of Auckland flowered at that season. It should be potted in light soil, composed of peat and loam, with sand intermixed, and requires a warm green-house during the year; there is little hope of its being able to bear the open air in this country. It is propagated by division of the root, in the same way as other herbaceous plants; or the young shoots may be taken and treated as cuttings, and will strike freely with a little bottom heat.

LIQUID MANURES, AND THEIR USES.

NOTHING is more common than for authors, on various subjects in gardening, to recommend liquid manure to be applied, without in one instance, from the beginning to the end of their remarks, saying what they mean by it, of what it is to be composed, or what quantity of any kind of manure and water composes it. Now, there is hardly a more uncertain thing, hardly a more vague expression, than liquid manure. Various are the manures of the present day. Leaf mould is vegetable manure, and the most innocent of any; for it is composed of nothing but the leaves which were the produce of the earth returned to earth again; and if you could make a ton of it hold in solution with a butt of water, and it were applied instead of water itself, it could do no harm; but this, perhaps, never entered the thoughts of those who recommend liquid manure. We have seen the dung of poultry made into liquid manure; one shovelful of it, in a state which we may call partly decomposed, put into a barrel of water, that is, thirty-six gallons. This was being applied efficaciously to potted plants about every third watering, and to out-of-door crops once a week. Every time it was used it was stirred up until the barrel was half emptied, when the liquor was used without stirring. The contents at the bottom were always cleaned out every time the liquor was emptied, that the quality should always be alike, and not be altered by the sediment of the former mixture. This was thrown on the ordinary dunghill, where it could do no harm. In another establishment sheep's dung was used, at the rate of a peck to a barrel of water. This was put in one day, and stirred up four or five times; and the next day, when used, it was stirred again. This was being used with success to large Camellias and Orange-trees while they were making growth, and with considerable advantage, and also to some beds of layers newly planted out, without any watering between at all; but as it was explained to us, the soil might have been covered all over an inch or two thick, and then left to wash in by rain and artificial watering, without doing any injury; and certainly, if the appearance of things were a criterion, there could be no doubt of it. We have seen cow-dung used, when decomposed, in rather large proportions; and here the precaution of using boiling water was taken, on account, as it was said, of the great disposition of cow-dung to breed the maggot or small grubs of some kind. The proportion was a spadeful to half a barrel, and stirred well several times before the water cooled. The liquid was used the next day to Carnations and Piccotees, in pots, just coming into bloom, and it was said to give them a good colour, and add to their strength. Again, we have seen the new cow-dung used to a bed of Ranunculuses, which were literally destroyed by the black maggot, and scarcely a healthy root taken up: the smell of the cow-dung evidently drawing or attracting some fly, which blowed and bred there, for there was nothing to be seen but myriads of them about the soil when it was stirred a little. Here the mixture was cold water, and the proportion about a spadeful to half a barrel, but the waterings with this were repeated without intermission. Since this I have actually seen a recommendation of Dr. Horner's, to form a Ranunculus bed with liquid manure and the soil together; the former to be saturated with the latter, as thick as cream. This must be pure theory; because, wherever there is green cow-dung used, there will the cow-dung-bob (as the fishermen call it) and other nasty maggots, breed by millions, if the fly be in the neighbourhood at all, and we never knew a place where cows were kept or grazed in the neighbourhood, that was not infested with it. Another liquid manure, which we have seen tried, side by side with guano, was common night-soil. It was offensive, it is true; for it had not been disinfected by any process. Two pounds weight of each were tried in twenty gallons of water; the former was at first very troublesome to hold in solution in water. It was only done at last by mixing it with something like an equal weight of powdered lime, and, when well amalgamated and thinned with boiling water, it was stirred and allowed to cool. The guano was, unlike manure, pounded and bruised, and dissolved with its weight of lime. These two fertilizers were tried on alternate half rods of onions; the night-soil was exceedingly efficacious, the guano not nearly so much; indeed, not much better, if any, than a half rod left to the common watering-pot. But here it may be mentioned, that the guano was not subject to analysis, and therefore nothing can be said as to guano in general from this experiment, although it may be safely taken as something like evidence in behalf of night-soil. It must now strike any one that to order liquid manure to be applied to anything, without stating how it is to be made, is the most vague and uncertain thing in the world. In a farm not far from the metropolis, the drainings of a cow-house, that is, the pure wet, without any of the manure, were used with the greatest advantage, with its equal quantity of water, and applied by a contrivance similar to a water-cart, though more clumsily made, all over a pasture field twice during the spring, and, as compared with the other pasture of the same character adjoining, the crop was much heavier. The same stuff, with three times its quantity of water, was used to saturate the piece of ground previous to sowing Cabbage, Brocoli, and other seeds of that nature, and the first crop came up, turned yellow, and died; on raking it well over, and sowing again, the seedlings came fine, strong, and healthy, and made good plants. Liquid manure for Dahlias, when the ground is not prepared before-hand, has been made of cow-dung, well decomposed, at the rate of a pint to a pail of water, and did wonders, which was rendered evident by leaving some to plain water only, and observing the great difference in the growth and size of flowers, foliage, and plants, altogether. Here was a very large proportion of cow-dung; and, as the mixture was stirred and used directly, before the dung, or any of the particles, could settle, the earth was, after a few waterings, covered with the fibres and waste, as it were, of the dung, which, perhaps, with the washing of the rain, found nourishment still, when watering was unnecessary. Much has been said lately about sulphate of ammonia and water as a fertilizer, at the rate of half an ounce of sulphate to a gallon of water. This we have heard affirmed to be good if used once to every five or six waterings, but not oftener, as the effect would be bad. Upon the whole, we do hope that those who talk or write of liquid manure, would be good enough to say of what it is to be composed, what quantities are to be used, and when and how it is to be applied—not in a vague, but a positive way. It is certain that, after pots have been washed through and through with plain water for months, liquid manure may be of great service occasionally, to supply what has been washed away; but it should be manure adapted for the plant, and the direction plain.

HORTICULTURAL NOTES.

Phloxes.—The Phloxes are now attracting much attention among the continental and English nurserymen. Since the introduction of Van Houtteii, Princess Marianne, and other new ones, a collection of the best is considered indispensable to the amateur cultivator. Some of the French and Belgian catalogues number more than forty kinds. During our tour, we saw many of the best in flower; but none of the striped ones excel the seedlings of our friend, Mr. Carter, of the Cambridge Botanic Garden, whose Henry Clay, and Frelinghuysen, not to name several others, are more beautifully variegated than Van Houtteii. No tube can be more valuable than the Phloxes: they need no protection like a Camellia or Pelargonium, and will grow in any soil, and almost in any situation.—*Hovey's Magazine.*

Rockwork.—The advantage of Rockwork is the power of relieving the sameness of a level surface by such a judicious arrangement of its structure, as will correspond with the position it is intended to occupy; the assisting by artificial means certain natural advantages, which will admit of its introduction for effect, or for growing particular plants; the opportunity of growing plants within the limits assigned to them, in which aspect, soil, and other minutiæ required, can be arranged, without interfering with such as may occupy the adjoining divisions; the facility of shade, or of exposure to the hottest sun, with protection from winter and spring frosts; and the perfect power of drainage, so especially essential for the growth and luxuriance of all, but especially of half-hardy and tender plants. The only objection which can be urged against rockwork, is its tendency to harbour snails and slugs. This may be easily remedied by watering early in the spring with ammoniacal liquor from the gas-works, diluted with water; or, in the summer time, with lime-water, some time after sunset, when these creatures come from their hiding-places to feed during the night. Such a process, with the ordinary care of picking off any that may be seen at intervals, will, by perseverance, effectually destroy them.—*Gardeners' Chronicle.*

Electro-culture.—This subject is occupying a considerable portion of attention at the present day. Some experiments have been tried at various periods, which have been thought to furnish good evidence of the powerful influence of the electric current, when artificially directed to growing plants; and the plants within the range of the experiment have been found to be sensibly and very considerably benefited. Some persons, however, deny that these effects are owing to the cause to which they are assigned. The experiments which are being made this season, in various places, are very numerous, so that it may be hoped that the question will be satisfactorily decided. In the meantime, the evidence is rather in favour of a beneficial influence; and the following remarks, by Mr. Forster, of Fendrassie, a successful experimenter, are worth transcribing, for the use of those who may feel desirous of attempting similar experiments. Speaking of the scene of one of his experiments, Mr. F. says—"It was electrocultured with poles four feet high; when the barley was six inches high, it was very decidedly of a darker green colour than the surrounding barley. On reaching a foot in height, it lost this deeper colour, as its points collected all the electricity within the reach of the suspended wires' power of attraction; and the colour was partially, but equally, clearly restored to it, by two suspended wires, and more lofty poles being adjusted." "As to the proper height of the poles, or rather of the lowest suspended wire, where more than one is employed, the rule is to have the lowest wire, fully six to eight feet above the highest probable altitude of the vegetable under experiment, when at its full growth; and if more than one wire is required for wider or larger plots, there ought to be a space of three feet in elevation between them. The reasons for these proportions depend on the relative attractive powers for the electric fluid, that many electricians have proved to exist between the points of plants and points or edges of metals, the former being three to four times more powerful than the latter; and the preference given for one line of wires, arises from the convenience of being then enabled to harrow and plough [agricultural experiments] without removing any of the arrangement, and of having far larger areas in one plot."—*M.*

Azalea Indica exquisita.—This variety was let out by Messrs. Knight and Perry, of the King's Road, and has been figured in a recent number of Paxton's Magazine of Botany. It was said to be superior in the distinctness of its colouring, to the variety called variegata, which is considered to be *one of the best* in form, of a delicate blush-pink tint, with an irregular border of pale colour, almost white. I have seen it several times during the present spring, and always have observed it to have a peculiar paleness of tint, as though it were faded, and to be far less distinct in its markings than variegata. I am, however, glad to find I was mistaken; for, at the Exhibition at Chiswick, on the 24th of May, a plant was exhibited from the King's Road nursery, the blossoms of which fully justify all that has been said of it; the colour, though delicate in tint, is nevertheless rich, with more rose in it than variegata; the edging is clear and distinct, though irregular in outline, like variegata; and it has a cluster of bright red spots on the upper part, which is nearly wanting in the other variety. This plant had been bloomed in a cooler temperature than the others, and it appears that the colour of the flower is injured by too much heat. It is very distinct in tint from variegata, and both are very desirable varieties.—*M.*

Brugmansia bicolor.—In the Magazine of Botany, attention is directed to the adaptation of this plant for growing against walls, in situations where it can be supplied with a small amount of protection. It is a handsome plant when grown indoors, but rather cumbrous from its size, and objectionable in being very liable to the attacks of that powerful though minute enemy, the red spider. In dry sheltered, sunny places on a lawn, it grows vigorously, and expands its flowers pretty well in the autumn; but in such a situation can hardly be efficiently protected from the frosts of winter. "At Chatsworth," says Mr. Paxton, "we have grown it for several years trained against the 'conservative wall,' where its long trumpet-shaped flowers constitute a truly splendid feature, throughout the latter part of the summer; and notwithstanding the usual severity of the season in Derbyshire, continuing till near the close of the year; and it is remarkable, that the depth and brilliancy of the colours increase as the autumn advances. The plant at Chatsworth covers the wall from the top to the bottom, for a breadth of twelve feet; and during August, October, and in mild seasons, December, it presents an almost unbroken mass of inflorescence. The number of flowers disclosed on one plant, at the same time, in each of these months, exceeds an average of two hundred." The flowers are exceedingly handsome, and in such profusion must have a splendid appearance: it should, however, be an object worth any one attempting the same thing, to moderate the growth of the plant by not using too rich a soil, as it is naturally rather a strong grower.

Fuchsia serratifoliæ.—This recent introduction possesses a wild natural form, of considerable beauty in itself, and a characterestic habit, different from that of most other kinds, in being robust, having its leaves in whorls (generally), and producing solitary flowers from the axils of the leaves. This new species is the F. serratifolia, of Ruiz and Pavou, a native of Peru, where it inhabits humid and somewhat shady situations about Mercia. It has been recently introduced to this country by Messrs. Veitch, nurserymen, of Exeter, through the agency of their collector, Mr. Lobb; and was exhibited by them at one of the meetings of the Horticultural Society of London, in April of the present year. It assumes the character of a stout branching shrub, attaining to the height of eight or ten feet: the leaves are large, three to four inches long, sometimes opposite, but generally verticillate, or whorled, and then usually in whorls of four; they are oblong, serrated, and slightly pubescent, of a reddish colour beneath: the flowers are drooping, produced from the axils of the leaves; the tube is an inch and a half, or more in length, rather swollen at the base, and of a pale and delicate pink, or flesh colour; the sepals are lanceolate, acuminate, greenish at the tips, and expanding to about a right angle with the tube; the petals are of an oval oblong figure, and are projected nearly in the same line as the tube; they are of a bright vermilion colour. One very distinct and peculiar feature in the individual flowers is the oval figure of the petals, and being of considerable size, this is rendered very apparent.

What revolutions the introduction of this plant may be the means of effecting in the new race of varieties to which it will doubtless give rise, it is of course idle to speculate on. The little—very little real progress made in the intermixture of the other species, should at least act as a lesson, neither to expect, nor attempt too much, nor to look for any amount of success without being guided by sound and philosophical rules in the means taken to effect it. [This notice from a correspondent gives us an opportunity of expressing an opinion, that it will not help us much.]

To destroy Red Spider on Vines.—It is often found very difficult to eradicate red spider from vines when the fruit is on them, as the syringe cannot then be used without injuring the bloom on the fruit. Under such circumstances, the only way to eradicate them is to wash the flues or pipes over with sulphur, and heat them so as to raise a fume of sulphur in the house, at the same time keeping the house closed as much as possible. This must be persevered in for several days to be effectual.—*Gardener's Receipt Book.*

To revive Withered Flowers.—Plunge the stems into boiling water, and by the time the water is cold the flowers will revive. The ends of the stalks should then be cut off, and the flowers should be put to stand in cold water, and they will keep fresh for several days.—*Ibid.*

PRACTICAL GARDENING.

OPERATIONS FOR AUGUST.—THE FLOWER GARDEN.

The potting of Auriculas is an operation which requires care and judgment, and is done by different successful cultivators in different months. We prefer August to any other, but we should not repot any but those which had insufficient room. Turn out the full balls carefully, and if the roots be not all about the sides, and beginning to mat, let them remain another season; but if you observe the fibres all round the outside, another pot is necessary. The mode of shifting from one pot to another is also varied by even good cultivators. Some invariably shake out all the mould from the roots, and if the centre or tap goes far down into the pot, they shorten it to about an inch below the lowest leaf, but so as not to damage a single fibre that is on the portion remaining. Then fill a proper sized pot with, in the first place, crocks or broken pots one-third full; next with a compost made of half cowdung, decomposed into complete mould, and well cleansed of every grub or insect likely to be mischievous; such as the wireworm, black maggot, centipede, and other ground insects; and the other half sandy loam, formed of turfs rotted. If this be sandy enough, or light enough, when mixed, to let water pass freely, it will be right; but if it be too adhesive, (which depends entirely on the nature of the loam formed by the rotted turfs) add silver sand well cleansed from all kinds of impurity, in the proportion required to render it proper in that respect. This compost may be put in the pot lightly, to form a sort of cone in the middle, as high as the edge of the pot, but much lower on the side next the pot; place the fibres all round the slope of this cone, and press the centre of the root down, so as to bring the base of the lowest leaf about half an inch below the edge of the pot, and filling it up with the compost closed down a little all round the sides, to press the fibres all lower down the sides of the pot, and to close the earth well about them at the same time. When we say press, we do not mean violently, so as to confine the roots, or prevent the water from going through well, but merely to close up all vacancies. The mould is then to be filled up to the base of the lowest leaves, which will be a third or half an inch short of the top of the pot. The plants are then to be placed in a frame, and the whole of them watered, the glasses shut down, and shaded for twenty-four hours; but the shading should be with some material that will not take away the light; even a mat takes away too much for the well-being of any plants, if covered over completely with it: light calico, or the waterproof transparent materials so much in use, are better. In this frame they may have air after the first day, and be shaded only in the hottest part of the day; they may also in a few days be entirely uncovered, mornings, evenings, and all night. The bottom, or ground under these frames, should be hard enough to throw off the water, and sufficiently sloping to let it run away directly it goes through the pots. Other cultivators object to the severity of root pruning here recommended, and unless there is some indication of ill health about the roots, do not disturb the balls of earth at all, but simply remove them with the crocks about them, to another pot a size larger; first putting in a few crocks to raise the ball to the proper height in the pot, and then putting the fresh soil carefully all round it, and pressing it tolerably close with the finger, or a piece of wood, without disturbing the fibres. There is no objection to this last plan, if you have plenty of plants; the only evils that we know of are, first, that of the blooms coming out of season, which a few of them will; and secondly, the possibility of the tap of the root being affected with an insidious canker, which might, under the other plan, be removed, but which will take the plant off, almost without notice, if allowed to remain on. Those plants which do not require moving, may be placed with the fresh potted ones, for they want shading from the heat of the sun, which cannot be of use, and may do much harm. Put all offsets that are growing into proper sized pots, and look well to seedlings. Give them room enough, and as soon as they are sufficiently large to have only a single plant in a pot, let them be placed in large sixty-sized ones, where they may almost remain till they flower. Prick out seedlings that may be large enough in the seed-pans, and which, in a seed-pan, continue to come up at all times; we have known them to continue coming up for more than eighteen months after they are sown, so that it is not wise to throw away a seed-pan, even after you think you have stripped it.

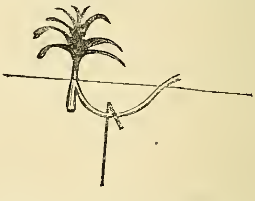
Annuals in pots require watering and shading, trimming off their dead leaves, tying some up to sticks to support them, and giving them air. Balsams are in perfection with many persons; they should be shaded to keep their flowers from damaging by the sun; so also should Cockscombs, Egg plants, and Globe Amaranthus. Clintonia pulchella, and many other very beautiful subjects in pots, may be kept a long time in flower, by shading and watering well. In the open ground Annuals require watering, tying up, cutting down decaying flower stems, clearing from weeds, and occasional stirring the earth round about them.

Perennials in pots, such as the Chimney Campanula, or Campanula pyramidalis, some of the Delphiniums, Petunias, Verbenas, in short all kinds, hardy, half-hardy, and tender, want considerable care and watchfulness during the hot weather of August. A few hours' neglect destroys the bloom, and this neglect much increased would destroy the plants themselves. Those in the open ground must undergo the same routine, except that watering need not be so frequent. They must, if slender, be tied up to stakes; decayed stems, leaves, and branches, must be cut off. Those which are out of bloom may be propagated by parting the roots, and this may be done two ways. If the borders in which they are growing are to remain in the same style, the best mode of doing this is to cut off with the spade portions of the patch which the plant forms, all round it, or on one side more than another, or at the back or front, as the case may be, so as to leave the plant in the ground perfectly undisturbed, and no larger than it is wanted. Digging out these pieces leaves holes, which must be filled up with fresh soil. The portions so cut away may be divided into moderately small pieces, and be planted in nursery beds, to grow into good-sized plants. Among the subjects to be so propagated may be mentioned the Scarlet Lychnis, Gentianella, the several Campanulas, Daisies, Polyanthuses, Primroses, almost all herbaceous plants, the Michaelmas Daisies or Asters of all the kinds, Peonies, &c. Where it is desirable to make the largest quantity of stock, the whole plant is better dug up, and divided into as many pieces as can be made with a portion of root to them, and planted in a shady border, six inches apart, there to grow and establish themselves.

Perennial Seed may be sown at the beginning of the month, and will grow sufficiently by the end of October or the beginning of November, to plant out in nursery-beds to acquire strength. Most persons, however, plant in June and July, to get strong plants before the winter, so as to plant them out where they are to flower, before the winter sets in; but in good ground and a good situation, they will grow quite large enough before the end of November to secure a good bloom in spring.

Bulbous-rooted Plants yield seed plenteously in a general way, and it may be sown as soon as it is ripe. This month, for instance, is a good month to sow the seed of all kinds of Lilies, Tulips, Hyacinths, Irises, Crown Imperials, Narcissuses, Crocuses, and the like. Sow in large pots, cover a quarter of an inch thick, place them in a cool frame until they germinate, which will be in spring. They will do equally well in the open ground if undisturbed, where they may be raked in well, and a little light earth be sifted over the whole. There they may remain all the winter; but, if it be very severe, put a little peas haulm over the beds, which is the greatest protection there can be against frost and its bad effects.

Carnations and Piccotees must be layered this month; for, unless they be well rooted before they are cut off, they do not get well over the winter, and this month it can be done under the most favourable circumstances; for the operation of layering should not be begun until the bloom has passed its prime. The usual plan has been to strip or cut off the leaves completely up to the top four or five pair; to cut the tops of the leaves off square, so as to shorten them considerably before the operation of layering commenced. This last unkind cut has always been against common sense. It is necessary so to strip or take off the leaves below the first four or five pair, for the purpose of cutting the stem, and leaving it proper for pegging under ground; but the leaves to be left on must not be shortened. With a sharp knife you must make a cut about two inches below the lower leaves that are left on; the cut is to be made from the under part, below a joint, nearly half way through the stem, and cut up towards the leaves half an inch. Cut the bit which you have separated, as it were, from the main stem square at the bottom, and peg down the shoot under the surface of the soil, as per example.



When the shoots are all pegged down they must be watered, and care must be taken that the plants are not distressed for water afterwards. They will be well struck in a month or six weeks, but they ought all to be layered this month. Remove the petals of flowers past their prime, if you wish for seed; as they often rot in the pod, and destroy the seed-vessel also.

Pinks.—The pipings of Pinks will have struck root by this time, or, at all events, this month. Plant them out six inches apart, in beds of rich earth, or earth well dressed with dung and fresh loam; the former thoroughly decomposed, and the whole well mixed. If you are obliged to use the ordinary soil of a garden, however good it may be, dress it with well-decomposed cowdung. Water them in well when planted, and in dry seasons give them a little occasionally, to help them.

ANEMONES may be taken up if they have decayed down, and they should be well dried in the shade before they are stored away. Sow seeds of Anemones in rich, light ground; cover them well over, but not too deeply, and in dry weather let the ground have a good soaking before they are sown, as well as occasionally till they are up, for the earth must never be thoroughly dry afterwards.

RANUNCULUSES should be taken up as soon as their foliage turns yellow, and be carefully dried in the shade before they are cleaned and put away within boxes. The seeds also may be sown, and if choice, they should be sown in pots or boxes, so that they might be removed to a pit, or under glass, to keep off excess of moisture in the autumn, and frost in the winter.

SEEDLING WALL-FLOWERS, SWEET WILLIAMS, CANTERBURY BELLS, ANTIRRHINUMS, ROCKETS, COLUMBINES, and all other hardy biennials and perennials in the seed-bed, should be planted out to grow into strength, where they are to bloom the following year, some in the borders, if necessary; but seedlings are better all in a bed—they are easier selected.

TULIPS.—Throw the soil out of the beds intended for Tulips, and lay it in banks on each side of the bed. Some plant other things in the Tulip bed instead of removing the soil out, but those who are really particular in the cultivation of the Tulip will not allow even a weed to usurp their places. When the soil is thus turned out, it should be frequently turned over to look after insects; and the more it is stirred about the better, especially in winter time. The Tulips ought to be occasionally examined in their boxes, to see there is no attack of green-fly; if there should be, they must all be put in a pit, or some other confined place, and fumigated with tobacco smoke.

ROSES.—Examine the budded stocks, and continue to remove all the growth of the stocks, which will for a considerable time push at all the joints, and greatly exhaust the strength that should go to the buds. As the buds push, let them be secured to a stick, or to the stock itself, so that the wind may not break out the bud, which is a very easy thing if the wind has any power; the shoots, when long, being easily blown clean out of their budding place. Roses of all kinds worked on stocks are liable to injury by the growth of the stock distressing them, so that they cannot too often be looked over and deprived of their stock shoots and suckers. The stakes also to which the trees are tied should be examined, and all seen to be fast, or made so; as the wind will blow about those with a large head enough to damage them materially.

SEEDS OF FLOWERS.—All kinds of flower seeds should be gathered in dry weather, and the stems of those that are not intended to seed should be cut down. The dead stalks and leaves of all plants should be cleared away, and the borders kept neat and clean.

BOX EDGINGS should be clipped and trimmed into proper order, keeping them very close down; and in sweeping and rolling gravel walks, great care should be taken not to damage the box edgings, nor sweep off the foliage from the bottoms, and make them bare.

The DAHLIA is the principal ornament of the gardens at this time, and florists are all upon the *qui vive* to produce flowers fitted for the exhibitions. If great attention has been continuously paid to the destruction of vermin, the work for the future will have been greatly lessened; but if they have been neglected, the attention now required will be great indeed. Shading must be resorted to, and covering in such way as to keep out vermin, though it is always far better to destroy them altogether at an earlier period. One of the most common, and perhaps effective methods of shading and protecting, is to have a board large enough to hold a thirty-two sized pot wrong side upwards; this board has holes at the corner, so that pointed sticks stuck in the ground, and the points through the holes at the corner, form legs to make this a sort of table. A slit is cut in this board from the side to the centre, wide enough to pass the stem of a Dahlia, so that the bud is brought to the middle. The slit is then stuffed with cotton, so as to prevent earwigs passing through, and a pot inverted is covered over the bloom, which, when covered, is perfectly free from attacks of vermin, a cork being placed in the hole of the bottom. We do not think the blooms are half so good when thus closed up, but it is a choice of evils. Some persons have glass covers, and shade them with cabbage leaves, or some such material. The instant you see a bloom will not do, take it off, for it is better away than distressing the plant. Whenever a bloom is likely to do, take off the buds in the immediate neighbourhood on the same branch.

WEEDING, cleaning, trimming, tying up, watering, and other routine matters as before.

The RHODODENDRONS and KALMIAS should be deprived of their seed-pods as soon as the bloom begins to decay, and be copiously watered. This, if well attended to, will secure a good bloom for the next season; whereas, if the seed-pods be allowed to swell, and there be a scarcity of moisture, a stunted, late growth, and no bloom for next year, are inevitable. American plants which have been bloomed in pots, set the better if denuded of their seed-pods, and planted out in the ground without disturbing the balls of earth; and they require more watering than even the established plants. They should be planted in the shade. They may be carefully repotted when their growth is made complete, and the wood ripened. They will require pots one size larger, to make room for their new roots; and the plants will have grown in proportion to the roots, so that they will be just as well proportioned to their new pots as to their old ones. While the plants are making their growth in the open ground, see that there are no more branches than are wanted for the beauty of the plant; and if there be, take them off, to throw the strength into the stems; and if any branch or branches appear to be taking the lead too much, cut them back, or the growth would check the rest of the shrub altogether, and the whole vigour of the plant run into the one branch or branches only.

In raking and making the beds tidy, and removing all the falling petals, many labels would be removed, and perhaps, among ignorant labourers, get put to the wrong trees, shrubs, and plants. See, now the plants are in full vigour and character, to all the labels, and adjust any that are not right. Make new ones for any that are lost, and the same with regard to all the flowers and plants under tally or number.

THE STOVE.

The necessity of moistening the floors and pipes to create a wholesome steam every evening, forces itself upon us almost before any other duty; syringing all over the foliage is good; abundant watering is required, too, during the hot drying weather, and any plants you have in bloom must be shaded during the heat of the sun, though it must be with thin light material that will not darken the house. Propagating by cuttings, under bell-glasses, in pots, that will allow of the edge being pressed into the soil inside of the pot. The preparation of cuttings of almost every production in the house is the same. Cut them up to the under part of a leaf which is a joint; cut off, without bruising the bark, the leaves at the bottom, to make it the more convenient for planting; wipe the glass out daily, and let the pot be plunged into the tan to get a little bottom heat. Any small plants, or, indeed, any plants that have filled their pots with roots, had better be shifted into other pots a size larger; and specimen plants, that you are anxious to grow fast, may have fresh pots as soon as the fibres of the roots reach the sides; and in such plants as are being thus grown, all bloom should be taken off as fast as it shows. Specimens of green-house plants intended to be grown fast are frequently carried to the stove, as Geraniums intended for propagation, Camellias intended for second growth, and many soft-wooded plants, which it is desirable to grow into stuff, as it is called. These should be placed at the coolest part of the stove, and be shifted from one sized pot to another as they grow, and when they have been grown as much as you require, they must be ripened very gradually in, first, a closed green-house, then with plenty of air, and, lastly, in a cold pit. Camellias are much more readily inarched and grafted in the stove than in the green-house; the stocks are removed to a cool part of the stove, and as soon as they begin to grow, the branch of the plant intended to be inarched is brought into contact with the stock by adjusting the height of the pots, then the operation of inarching is performed, by cutting or shaving away pretty nearly one-half the branch of the plant, and then cutting the stock, as near as possible down to the pot in the same way, nearly half through; then the two flat places are adjusted so as to fit; then cut a sort of tongue, in one upwards, and the other downwards, so that they will tuck into one another, when it is bound fast, and the two allowed to grow together till they have united, when the branch grown to the stock is to be separated from the parent plant, and all the stock that is growing is cut away. The uniting of the graft and the stock in the stove will not take more than six weeks, if the join be well made; generally speaking, the stove has not much to do but aid in propagation this month.

THE ORCHIDEOUS HOUSE.

Moisture, by constant syringing, and heat, and some air, are the condition required now for the plants coming into flower, but those which are in bloom must be kept much more cool, and even these must have moisture and shade. When a bloom is once in perfection, it will keep a considerable time longer in a moist than a dry air, and in a cool than a heated atmosphere. Some, indeed, will stand many days in a cool drawing-room, free from draughts of air or wind. The Oncidiums especially last a long time. Perhaps of all the families of orchideous plants, the Stanhopeas stand the worst. The plants which are growing must have plenty of moisture and heat, and it will be easily seen when their growth is completed, and then it is proper to let them rest—that is to say, lessen the water, and even the heat; in fact, they may be placed in a cooler part of the house, and be no longer syringed for some weeks, at least. The plants must be frequently examined, for red spider and bug; the mealy bug especially is a great enemy to orchideous plants, and if they insinuate themselves among the bloom-buds, will destroy the flower altogether. Washing with soap and water and a brush like a long-haired shaving brush, has been the best remedy we have ever adopted, and if taken in time, it never fails of success; the greatest care is required in the application of the brush, which should be pushed, as it were, into the corners, until the insects are routed; and syringing afterwards with clean water is of great use to cleanse them thoroughly from the soap. Orchideous plants that you are desirous of increasing, may be separated and potted into small pots, or fastened to blocks, or placed in baskets. Fill pots with pieces of turfy peat the size of a walnut, and peg them altogether until they form a cone above the pot; among the lumps that are above the pot put some good moss, and on this place your plant, which is, in fact, a piece cut off another plant, and with four pegs, or wire, make it fast; let the roots go where they please in the pot, or outside it. Orchideous plants of every kind depend but little on nourishment independent of the air and moisture, which is generally enough for them. For this reason some cultivators place the majority of plants on a wall. Those which throw out roots all over them, are as well hanging up on a hook in the wall, or on the stump of a tree, as they are placed on a pot; the only object in potting is to stand them on shelves, which could not be done if they were on blocks, or in baskets. Oncidium papilio is a constant bloomer, and every joint of the flower-stem will throw out flowers in due time; be mindful, therefore, that you do not cut off what appears to you, perhaps, to be dead stems.

THE GREEN-HOUSE.

Here much the same routine as recommended last month is to be pursued. Most of the plants are out of doors. Cuttings of all kinds may be struck, under glass; and any that have already been struck, should be potted off, according to their habits, in small or large sixty-sized pots. Hard-wooded and slow-growing kinds, will do in the smallest size, Fuchsias, Geraniums, and other fast-growing plants, in the larger ones. Plants that you wish to grow bushy and short, should have their top bud pinched out; others may have their natural growth until you see one portion of the plant growing too strong for the remainder, when you may check it by pinching out the end bud, or heart, or by cutting it back. Fuchsias blooming in the green-house must have plenty of air; and, indeed, there should be as much as possible given to all plants. Camellias have now set their bloom-buds, and made their growth; they should be stinted of moisture, and if the season be very dripping and wet, they had better be placed where they can be protected from any excess, or it may induce a second growth, which is by no means desirable, except in new and valuable sorts; and to produce a second growth with them, they should be taken to the stove, or propagating-house, and after shifting into a pot one size larger than they are in, they may be well watered; and if the bloom-buds swell, pull them off as soon as you can do so without damaging the growing buds by the side of them. Tender annuals, in pots, require a good supply of water as soon as the flower-buds are swelling, but the drainage must be very free, or they would soon take harm. The generality of plants are out in the grounds, or in pits, where they are setting their blooms, if they be not already set; and preparations may be made in the house for the return of the principal plants early in September, or, in some cases, even at the end of the present month. These preparations should consist of well scrubbing and washing all the shelves, and cleaning out all crevices and corners, to expel any kind of insects that may be locating there, and syringing wherever you cannot reach. It may be necessary to paint, in which case the plants must be all turned out into various places, wherever they can be best protected, and by setting several men to work, let all the painting be done quickly, taking off all the lights, and leaving the house entirely open during the remainder of the month, for white lead has been found prejudicial to plants, and therefore requires to be well dried off, and the effluvia got rid of, before the lights are put on again. Care should also be taken, that when all the other parts are cleansed, and the produce of the sweeping, brushing, and syringing, is on the ground, to well cleanse the ground at the same time, or, so far as insects are concerned, you would soon find them returned to their old habitations; therefore, having brought everything to the ground, let not a moment be lost in clearing the ground also.

THE CONSERVATORY.

This, which is a show-house of an establishment, and always liable to the visits of the family, must be kept well at all times. Roses are of great assistance at this period, and there is no lack of variety among them. For this purpose a good many should be grown in pots, for they are always useful and desirable. The flowering annuals are also of great service, and must be placed in requisition. The stove affords the noble Ixoras. The orchideous-house yields its portion of floral beauty in the Oncidiums, which last for weeks, if not months, in flower; besides its constant but temporary supplies of more ephemeral subjects, Stocks, Mignonette, Clintonia pulchella, Rodopne Manglesii, the numerous

German Stocks, Cockscombs, Sweet Peas, and other sweet and pretty subjects, are easily provided to cover the beds. The Strelitzias, Brugmansias, the Orange and Lemon tribe, in full bloom and fruit, become all-powerful agents in the furnishing of the conservatory in August; and Dahlias, in pots, which are more easily commanded than almost any other subject from July to the frosts, are gaudy and available, of any colour. The conservatory must be continually weeded, raked, and swept, and every fallen petal, leaf, or flower, must disappear the first thing in the morning. Subjects from the stove should be always placed where there is the least wind, or draught of air, as they are the most easily affected. Those from which you derive no perfume, such as Dahlias, and other showy things of the kind, should be the most distant from the path usually frequented; and all the fragrant subjects should be nearest the front, whether they are on the ground, or on stands, shelves, &c. Neatness is everything in a conservatory, so that the instant there is a plant beyond its prime it had better be removed, for its room is far better unoccupied than taken up with a loose, straggling, half-decayed plant, be it what it may. In other respects, the directions of previous months will be available in a great measure, and may be for the most part attended to.

THE KITCHEN GARDEN.

Mushroom growers may make up beds, or some other contrivances, for raising this useful article, and it is curious to contemplate the various modes of doing so. The principal ingredients required are, first, short dung or droppings in a state of gentle fermentation, and the mushroom spawn. Of the many ways of producing the same end much may be said, but only two things are necessary; one is to get the dung of a gentle warmth to receive the spawn, and the other to cover it with a little clean loam. Now, whether this dung is placed in a sloping bank in a dark cellar, or in an outhouse,—whether it is on shelves in a dark cupboard or at the bottom of a vinery,—whether a flower-pot be filled three-parts full of the dung, and a lump of spawn be put on it and covered with mould in the stove, or bits of spawn be dibbled in, six inches apart, all over a declining melon or cucumber frame, the result will be the same, a plentiful supply of the articles required: good spawn only wants the means of spreading, and it will work anywhere, from the common field to the mushroom-house. It has been said, in a garden newspaper, that light and heat are essential to the production of the mushroom; nothing can be more erroneous, the shelves in a dark cellar, in which no ray of light penetrates, may be made as productive as the same space in any other situation in the world. Throw on the ground a heap of the short dung, nicely tempered and regulated, so as to moderate the heat, whether this heap be two bushels or two hundred matters not, except that the smaller quantity should be in the form of a cone, and the larger quantity would be lengthened to a bank; all over this cone, or on both sides of this bank, place lumps of spawn (which is purchased at any of the nurseries the same as seed is) about as large as a hen's egg, nine inches apart every way, just tuck them in under the surface, then cover all with about an inch and a-half of pure light loam, or, in the absence of this, good garden earth. Now, if this be exposed in the open air, there must be six inches thickness of straw put over the whole; if it be in a warm outhouse, much less will do; if it be at the bottom of a stove or grapery, there needs no straw, nor does it if in a warm cellar. If they are to be grown on shelves, make the sloping bank of dung from front to back, and serve it just the same, except that the pieces of spawn may be less and put closer together. If you use one of your declining hot-beds, from which the heat has not all departed, scrape off all the mould but two inches thickness on the dung, and make holes down to the dung, to insert the pieces of spawn six inches apart all over the bed; cover with the mould you take out of the holes, so as to fill them up again, and close up the frames, giving air occasionally, and shading from the sun with mats.

Cabbages.—Sow seed on good ground in an open situation; prick out small plants from the seed-bed to grow into strength. Plant out any you have strong enough into vacant places; plant them thick, so that portions may be used as greens, or rather coleworts, in bunches, and thus thin the remainder to proper distances.

Potatoes.—If any of Chapman's remain out of ground, plant them the first week; earth up those planted last month; hoe and clean the spaces between the rows.

Asparagus Beds.—If you have none already made, this is the time for making them. The old-fashioned way of doing this is to form beds three feet six inches or four feet wide, and alleys between them the same width at top, but sloping like a ditch, so as to be only eighteen inches at bottom. To make these permanent, mark out your four feet width, and dig two feet deep, fill the space with rotten turfs, rotten dung, and the best of the stuff you take out, or if you can get no other than the stuff you take out, mix half rotten dung with it, and return it all to the hole again, treading it in rather lightly than otherwise, but still enough to settle it. The addition of the dung will, of course, raise the bed considerably above the surface; upon this, when adjusted, plant, or rather lay on the surface, three rows of two-year-old roots, one down the middle, and one on each side, eighteen inches from the first; now the space between, which has not yet been touched, may be dug, and two inches of the stuff covered all over the bed, so as just to cover the crown of the plants; three inches of thoroughly rotten dung may be put on the bed all over, and a slight covering of earth from the side completes the thing. This will, in the course of time, settle down so as only to cover the plants two or three inches. By digging down a few inches in the alleys between the beds you will have stuff to earth up the beds in spring, when there should be six inches between the crown of the plant and the surface. We prefer a more simple method a good deal: we should dig a trench as if for celery, mix half rotten dung with the stuff we took out, and, when well amalgamated, we should return enough of the mixture to fill the trench; when just level, we should put one row of plants along the centre, and cover them with the rest of the stuff, which would form a ridge all along, covering them a good six inches in the centre. These ridges we should have four feet apart from the centre to centre; but our mode of cutting asparagus is different from that of many: we should allow the buds to shoot out of the ground a good four, five, or six inches, and cut them even with the surface of the bed, and not disturb the ground, to get white stalk to it. The flavour is more delicious, there is much more of it eatable, and though not so marketable, infinitely better for families. This method requires no earthing up, and you may grow other crops in the space between the rows. The only thing required is to keep them always clear from weeds.

Trench in some Horse-radish, laying pieces of the root, an inch long, at the bottom of the trenches, fifteen inches deep, in rows, about as distant as ordinary trenching, dunging the ground well, and throwing it in light. Every piece will make a plant, which, if the mould is well turned, and pretty free from stones, will be straight and handsome.

Salads, such as Lettuces of all kinds, small salad, &c. may be sown again. Lettuces, which are large enough, should be planted out. Onions may be sown to draw while young.

Onions.—All that have perfected themselves may be drawn to be stored, leaving them on the ground a short time to ripen and harden. If the weather prove wet after a day or two, they must be dried, under cover, on mats or a dry floor.

Turnips.—Sow for a good crop, perhaps the last; any of the early kinds will mature soonest.

Winter Spinach.—Sow for a main crop. This must be thinned when it comes up, and indeed some plant it out, for the plants must be nine inches apart, and it is used by taking off the leaves as they grow, and not, as in the summer kinds, by using the whole plant at once; the large or outside leaves are picked off for use, and the plant will continue supplying the table the whole winter; it is, however, necessary to give it plenty of room, so that, when it is up, it must be thinned out to the distance mentioned, and constantly be kept clear of weeds.

Parsley.—In the parsley, which is growing fast, you have two things to mind, first, to pull up all that has not a good curled leaf, and secondly, to thin the remainder enough to give plenty of room to the plants, which grow weak and spindly if crowded. The taking away all the poor-looking foliage is called roguing. It is better to begin by taking out the worst plants, and to continue taking out the worst until the plants are left in the ground thin enough to do well; plants six inches apart are quite near enough.

Seeds of all kinds intended to be sowed should be gathered as they ripen, and placed in security where it is dry. Most seeds are better for remaining in the pod till they are required for sowing.

Leeks may be earthed up three or four inches, to whiten the lower portion.

Celery.—Earth up as it grows; this requires to be continually done as the plants advance, and dry days should be chosen for the occasion, and the earth well bruised, and in performing this operation care must be taken that the earth does not go into the heart of the plant. Plant out a principal crop for use all the winter.

Brocoli.—Plant out the last, if possible, this month; draw the earth to the stems of any that have been planted some time.

Cauliflower seed may be sown towards the end of the month, to be kept in frames during the winter, or to be protected with mats.

Winter Greens of all kinds, such as Brussels Sprouts, Kale, Savoys, &c. should be planted out in all spots that are vacant.

Beans that are in bloom should be topped, to induce strength in the plant, and consequent fruiting.

Hoe and stir the ground between all sorts of crops, to clear it of weeds, and loosen the surface; water all things that are likely to suffer from heat and dryness.

Cucumbers require little more than laying their shoots in the best direction for giving them room; let them have air in the heat of the day, and water occasionally; take off some of the fruit where they set too thickly, if you wish the produce to be fine; if you are indifferent about size, and prefer number, let them remain. In most respects things left undone last month may be done this.

Carrot seed may be sown to stand the winter the first and third week in this month.

Endive may be transplanted, and some more seed sown.

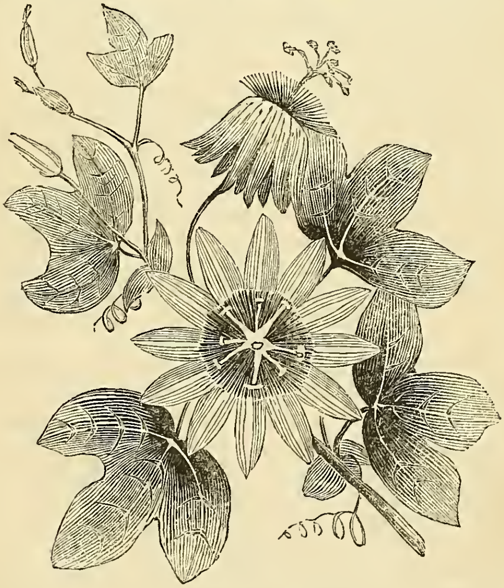
FRUIT GARDEN.

The great art of producing good fruit on well-established trees consists in regulating the quantity to be retained, and carefully gathering them. A Cherry-tree will bear five or six gatherings, for the best alone ought to be taken each time. Wall-fruit generally is so easily managed, that the fruit is mostly had in perfection, but standards are too often cleared at a single gathering, ripe, half ripe, and not ripened at all; and this rough lot goes to market to be sold for less than the good among it would bring alone, or it is half wasted in the house. Great care should be used in gathering almost every thing that ripens irregularly; Plums, like Cherries, might be gone over many times, and only the best taken. It is impossible to calculate the advantages of gathering the forwardest first, and leaving the others to get rapidly better.

Strawberries.—Take off the strongest runners, and plant them six inches apart in the row, and the rows a foot apart, on a good rich border; there they will bear the first year, and the crop improve the next. If there be no edging to the beds and borders in the fruit garden, or even in the kitchen garden, the warm side is often edged with Strawberries. The best place, however, for Strawberries is a border under a south wall, where they always ripen much earlier.

Wall Fruit, Grapes under Glass, &c. —Bottles of beer and sugar should be hung up in various places, where the flies, wasps, &c. are likely to attack fruit, to trap them and destroy them, as a choice between that and their destroying the fruit. Wherever there is any growth of little shoots that must be useless, take them off to throw more strength in the rest of the plant. Thin the grapes again, so as to leave no more than will ripen well at the same time.

Newly-budded Trees may be examined, to see if they are all properly fastened, to take off all portions of the growth from the stock, and suckers from the root, all of which will distress the new bud.



Passiflora Kermesina.

THE PASSION-FLOWER.

The generic name Passiflora, constructed by Linnæus, was formed from *passio*, passion, and *flos*, a flower; on account of some fanciful resemblance between the filamentous rays, in the centre of the flower, and the emblems of our Saviour's passion. There are upwards of a hundred species and varieties recorded in catalogues, many of which, however, are not in cultivation; others are not found beyond the precincts of botanic gardens; whilst some few are generally cultivated for their beauty, and others for their fruit. They are chiefly natives of hot countries.

Among the species of Passion-flower, there are some, and these the majority, which require to be cultivated in the temperature of the stove; others succeed to perfection in a green-house; and P. cœrulea, and some of its varieties, are sufficiently hardy to be cultivated against a wall, in the open air.

The natural habit of the whole race of Passion-flowers, is that of strong, vigorous-growing climbers; and hence they are none of them very suitable for growing in pots. Whenever this natural tendency to extend themselves is to any extent interfered with, the production of flowers is, in a great measure, prevented, owing to the expenditure of the organized sap in the formation of other leaves, to prepare the materials necessary to the formation of flowers; and, on this account, it is only one or two of the most free-blooming kinds which can be successfully treated under pot culture.

It would be altogether outstepping our limits, to attempt to describe, or even to enumerate, all the kinds which exist in our gardens; and we think it will be sufficient for our purpose to describe, somewhat more in detail, a selection of some of the more distinct and handsome species at present known. This will be the most useful course we can adopt.

Passiflora cœrulea.

SELECT LIST.

HARDY SPECIES.

Passiflora cœrulea, (Common blue Passion-flower.)—This is the only showy hardy species which is at present known. There are one or two others nearly hardy, but they produce very insignificant flowers. Of P. cœrulea there are five cultivated varieties, slightly differing from the original kind. It has five-lobed leaves; and the flowers are pale greenish white; the filaments of the ray are purple at the base, white in the middle, and blue at the tips. The plant will extend over a considerable space, and flowers freely. It should be planted against a wall, where it will stand our ordinary winters, with no other injury than having the points of the shoots killed.

GREEN-HOUSE SPECIES.

Tacsonia (or Passiflora) pinnatistipula, (Pinnate stipuled Tasconia.)—This is a very free-growing plant, which probably, in some situations, might be found to be hardy, as it inhabits a colder climate than P. cœrulea. The stem is downy; the leaves of three narrow lobes; the calyx of the flowers is nearly white, the petals rose-coloured, and the filaments of the ray blue. The genus Tasconia differs from Passiflora, among other things, in the long tube of the flowers.

P. incarnata, (Flesh-coloured Passion-flower.)—This has three-lobed leaves, pink flowers, and the filaments of the ray in a double circle, and of a purplish colour. Perhaps this can hardly be considered a green-house species.

STOVE SPECIES.

The greater number of the Passion-flowers, and all the more handsome kinds, require a greater degree of warmth than is obtained in a green-house. They do not, however, require a very high temperature; something intermediate between a stove and a green-house is most suitable for them; a house with a mean of from 55° to 60° of artificial heat would suit them well, except for the maturation of fruit, which requires a rather higher temperature.

P. alata, (Wing-stemmed Passion-flower.)—A very handsome species, with glabrous, ovate acute leaves, and sweet-scented flowers; the upper side of the calyx and petals is of a deep crimson; and the filaments of the ray variegated with purple, white, and crimson.

P. phœnicea, (Phœnicean Passion-flower.)—This species somewhat resembles the last, but it has much more gorgeous flowers. There is a plant cultivated under the name of P. elegans, which seems to be a variety of this kind, or is, perhaps, the same.

P. alata-cœrulea, (Hybrid-winged Passion-flower.)—This is a hybrid from seeds of P. alata, fertilized with P. cœrulea. The leaves are three-lobed; the outer side of the calyx is rose-coloured, and the inner side of the petals is white; the filaments of the ray are variegated with black, blue, and white.

P. RACEMOSA, (Clustered-flowered Passion-flower.)—This species is one of the most handsome kinds grown. The leaves are glabrous above, and glaucous beneath, three-lobed; the flowers are borne in pendulous terminal racemes, of a deep red or scarlet colour, and are very showy. A variety of this, called P. racemosa princeps, is even superior to the original kind.

Passiflora racemosa.

P. KERMESINA, (Crimson Passion-flower.)—This kind is of more slender growth than many, but yet free enough, for it flowers most abundantly, and is very showy. The leaves are bluntly three-lobed, purplish beneath when young; the flowers are of a pretty crimson colour. It is one of the best, and will succeed, during the summer, in a warm green-house.

P. MIDDLETONIANA, (Mr. Middleton's Passion-flower.)—A strong grower; it is called also P. fragrans. It has large three-lobed leaves; dark green and shining; and flowers which are greenish, thickly dotted over with pink; the filaments of the ray, which is large and showy, are banded with blue and white. It is very sweet-scented.

P. ACTINIA, (Sea-anemone-like Passion-flower.)—This also is a strong growing plant; the leaves are three inches long, ovate obtuse, dark green above, and pale beneath; the flowers are nearly white; the filaments of the ray are very numerous, incurved, and twisted, and are banded with red, blue, and white. It has been recently introduced, and is very sweet-scented. The name is adopted on account of the resemblance between the filamentous crown and the actinia, or sea-anemone.

SPECIES CULTIVATED FOR THEIR FRUIT.

P. QUADRANGULARIS, (Common Granadilla.)—This species has ovate leaves; the flowers are highly fragrant, red inside, and white outside; the filaments of the ray are white, variegated with violet; the fruit is oblong, about six inches in diameter, and greenish yellow when ripe.

P. MALIFORMIS, (Apple-fruited Granadilla, or Sweet Calabash.)—The leaves are ovate; the flowers large and sweet-scented, white, with a blue ray, variegated with red; the fruit is round and smooth, about two inches in diameter, and dingy yellow when ripe.

P. EDULIS, (Purple-fruited Granadilla.)—This kind has three-lobed leaves, and fragrant whitish flowers, tinged with purple; the fruit is elliptical, about one inch and a half in diameter, and purplish.

P. LAURIFOLIA, (Laurel-leaved Granadilla, or Water-Lemon.)—This has ovate oblong leaves, and red and violet sweet-scented flowers; the fruit is about the size of hens' eggs, yellow, dotted over with white spots.

All the species flower during the summer, and continue blooming through a portion of the autumnal months.

PROPAGATION.

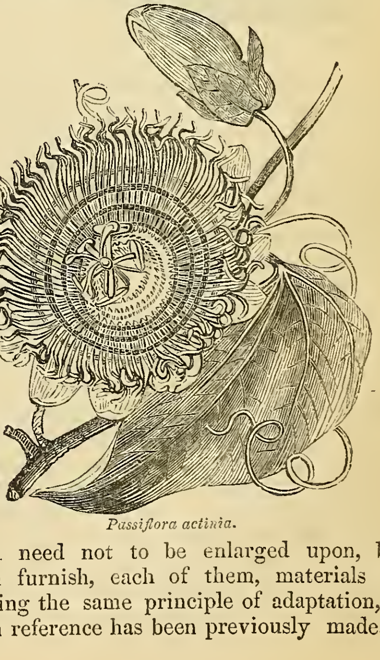
In regard to propagation, the species of Passiflora present no serious obstacle in the way of increase: cuttings are rooted without difficulty, when plunged in a medium degree of bottom heat; layers are easily made, and speedily become rooted, and thus larger plants may be obtained within a less space of time than when cuttings are employed; grafting and inarching may be had recourse to with every success; and, finally, some of the kinds produce seeds, by which means they may be propagated; and advantage may be taken of this quality to procure new varieties. Since all these methods of increase are available, and all equally easy of accomplishment, and open to success, it may be thought to be a matter of total indifference which of them is adopted; nevertheless, if some particular object is held in view, it seems to be just possible that one of these should be more likely to effect it than another; and here, perhaps, may be found an example of the value and necessity of adaptation in matters pertaining to gardening. If we briefly state the kind of result which each method is likely to realize, and leave the application of it to individuals who are interested, we shall have done sufficient to convince them, that even in matters of apparently small importance, there is room for the exercise of judgment and discretion. Plants raised from cuttings, all other circumstances being equal, are soonest brought to a blooming state; the reason of this appears to be, that the cutting, *before it becomes a* *plant,* is furnished with the organs of elaboration (leaves), and is also stored with organized matter, resulting from the action of the leaves, which are either present, as in the case of evergreen plants, or have been present at a previous period, as in deciduous plants; such being the case, the organized matter in the cutting takes and keeps the preponderating influence, and the materials for developing flowers are sooner within the reach of the plants, and become subjected to the influences under which the plant is placed. By the same rule, plants raised by the process of layering, would be more fully furnished, at a given size, with organized matter than seedling plants, though less so than cuttings; and in the same ratio they would, under favourable circumstances, be influenced as to their production of flowers. Grafting, or inarching, would have one of two influences, according to the circumstances; if grafting near the root, on a free-growing stem, so as to *take the place* of its branches, then the preponderating influence of the root would send up a quantity of unorganized and crude sap, which would induce growth, but not bloom; if, on the other hand, a portion of any kind were grafted among the branches of the free-growing stem, it would share with them a portion of the organized sap, which it would appropriate, and thus sooner arrive at a flowering state. In seedling plants, during a portion of their younger days, the influence of the root is predominant, causing the necessary growth and extension of the plant, clothing it duly with foliage, and thus providing the means whereby the sap is to be elaborated and organized, previously to its expenditure in the production of flowers. Thus, each method of propagation will be seen to have some peculiar and appropriate application.

Passiflora kermesina.

CULTURE.

In the general features of their cultivation, the stove and green-house species assimilate very closely. They require a free, open, loamy soil, more or less enriched, according as it may be desirable to induce or retard their growth. For the same reasons, the size of the pots, or of the area within which their roots are confined, may be allowed to vary. Generally, the most appropriate places for them, are, to run up the rafters, or over the roof of the house, or to cover trellis-work on the back or end walls. In any of these situations, there will be sufficient space for the almost unlimited extension of the branches, and therefore a proportionate degree of encouragement must be afforded at the root. When required only to extend over a more circumscribed area, the supply of the means of growth must be cut short, both in quantity and quality; less highly-enriched compost must be employed, and smaller-sized pots adopted. This presents us with another example in which the principle of adaptation should be kept steadily in view.

There are certain minutiæ which are required no less by these than by all other plants cultivated under similar circumstances; such as, the proper and efficient drainage of the soil, the necessary application of water, the regulation of heat, and the interchange of atmospheric influences. These are routine matters, which need not to be enlarged upon, but which furnish, each of them, materials for applying the same principle of adaptation, to which reference has been previously made.



Passiflora actinia.

The regulation, arrangement, and distribution of the branches, may require a more particular notice. The flowers being produced on the young, growing shoots, it is necessary to manage them so as to secure the greatest quantity of these on the space within which the plant is to be restricted. There is, perhaps, no better rule, than to prune away whatever is superabundant, and confine the branches to the rafters, or principal wires on the roof, or if on a trellis, so as to allow clear spaces between them, and then to allow the blooming shoots to hang about in festoons, or in the most natural and graceful manner that can be secured: these shoots would partly require removal, at the subsequent regulation of the plants, which should take place during the period when they are not in vigorous growth.

Passiflora quadrangularis.

We have not yet heard of much having been done in the hybridization of the Passion-flower; although, from the fact that many of them produce seeds freely enough, and that there exists a very great dissimilarity between many of the kinds, there seems no reason why something more should not be done in this way. Some few seedling varieties are in existence, and these may be taken as evidences and pledges of what might follow, were some careful and assiduous cultivator to give attention to the subject. Why not impart the odour of P. fragrans to the more abundant flowering, and more useful P. kermesina, and P. Loudonii? Or, why not impart the colour of these to the hardy species, and thus add some other gems to our out-door climbers? Even the more ample foliage of some of the tender kinds, if secured in connexion with a more hardy race, would certainly be an acquisition; and why should it not be attempted? and if attempted, why not obtained? Looking at what has been done with other things, we see no reason to doubt that this would, in due time, and with due perseverance, be also accomplished.

CULTURE OF THE FRUIT-BEARING KINDS.

Several species of Passiflora, being cultivated as fruit-bearing plants, it will be desirable to give some account of the treatment which is required to secure the proper growth and ripening of the fruit. They are called Granadillas. P. quadrangularis is most generally cultivated: its fruit is oblong, about six inches in diameter, of a sweet, slightly acid flavour, grateful and refreshing, especially in a hot climate, where it is usually eaten with wine and sugar.

A house, somewhat intermediate between a stove and a green-house, is most suitable for them: they will grow and flower in the latter, but do not set their fruit unless supplied with more warmth; they do not, however, require the full heat of a stove, but succeed in a temperature of about sixty-five degrees. They will succeed if planted in large pots or boxes, but the better plan is to give a greater scope to the roots by planting them out into the corner of a tan-bed, or over a hot-water tank. A portion of the pit should be parted off by boards, quite down to the bottom, and this space should be filled up, first, with a portion of brick rubbish for drainage, on this a portion of rough old tan, and the remainder good light loam, well enriched and lightened by the addition of very old tan, leaf mould, and manure; in this they will rapidly progress, and protrude beyond the narrow boundary into the tan-bed beyond. As the shoots advance in growth, the strongest should be cut quite away, as they are less prolific than others of more moderate growth; the remaining ones should be trained as they advance near to the glass, and they will begin to produce flowers in May, and continue blooming till September, during which time the setting of the fruit will be going on; these fruiting branches ought not to be shortened. If the fruit does not set well, the stigmas should be impregnated by applying the pollen either of the same, or of any allied kind; and in cases where a large quantity may happen to be set, part of them should be removed, to impart extra vigour to the remainder. During the time of flowering and fruiting, the temperature will require to be equally and regularly maintained, to encourage the swelling and ripening of the fruit. About August, part of the crop will be arriving at maturity, and others will continue to do so for some months; the earliest fruit are, however, the best, owing to the influence of the sun, in properly maturing the juices. By the beginning of January, the whole of the crop will be matured and gathered, and at this time the temperature should progressively be reduced ten or fifteen degrees, so as to intercept their growth. They must also be pruned in very close, leaving little else besides the main stem; the greater part of what is trained in for bearing the following season, should be two years old. In this state they may remain for about two months, when the necessary increase of temperature, to start them into growth, must be gradually brought on, accompanied by the natural stimulus of vegetation, all of which should be most freely applied when the influence of the sun is most powerful. There is yet another point connected with the Passion-flower, as a fruit-bearing plant, which should be noticed. The flowers of all the species of Passiflora, are well known to contain a fringe-like circle of long, narrow, fleshy filaments between the petals and the part which at length becomes the fruit. In their natural places of growth, the whole progress of development would be rapid, and these filaments would speedily have served their purpose, and have dried up and decayed; but from the more tardy and sluggish action of plants when under artificial circumstances, and when suffering from the defective supply of solar light and heat, these portions of the flower assume a more permanent character, and retain their succulence for a much longer period; in consequence of which, a superabundance of moisture is induced in the immediate neighbourhood of the scarcely yet impregnated germ; and this has sometimes the effect of destroying it. The best remedy is to observe that no extraneous moisture becomes lodged in the cavities formed between the base of the several parts of the flowers.

The fruit of the Passion-flower is sometimes preserved with sugar, and is said to form a very excellent addition to this class of luxuries.

DOMESTIC GARDENING.

THE COVERED BALCONY.

This is, in fact, a green-house on a small scale: the plants we shall enumerate for the situation are legitimate inhabitants of the green-house; and consequently, the treatment to which we shall have to direct attention is, with some modifications, that to which green-house plants are properly subjected. We shall first notice some of the more important matters, such as watering, potting, and the regulation of heat and air.

Watering.—The importance of rightly performing this operation may be gathered from the fact that plants derive a great portion of those matters which conduce to their nourishment from the soil; and these matters are only available to minister to their wants when they are presented to the roots in a fluid state, or, in other words, when held in solution by the water contained in, and administered to, the soil. Consequently, water is a direct agent in the application of the food of plants, if not, indeed, the source whence some part thereof is derived; and it is, therefore, equally necessary—we had almost written, indispensable. But then, this salutary influence of water is only exerted when it is evenly and equably distributed among the particles of the soil, and disposed in such a manner as to permit the circulation of the constituents of the atmosphere throughout the soil; for it is only when in this state that those chemical changes can go on between the air, the water, and the substances forming the compost, which will render the latter soluble in water, and fit to be absorbed by the spongioles, or growing points of the roots, and thus appropriated to the nourishment of the plants. When moisture in excess is present in the soil, it becomes less open and porous; the particles of water cohere, instead of being separated; and consequently, the free access of atmospheric air is prevented. This alone is the source of much evil; but another consequence also follows, the soil becomes saturated or soured whenever the access of air is prevented, and in this state is most inimical to the healthiness of plants. This will, we think, be sufficient to establish our point, viz. that watering is one of the most important operations attending the art of cultivation; and that, without proper regard being paid to it, the success of other appliances will, at the best, be imperfect, and the cultivator will, at all times, be subject to more or less of disappointment.

It is impossible to give any exact directions as to the frequency of the application of water; and hence arises the difficulty of imparting correct ideas on the subject. To name any special condition of the soil which should be aimed at, is liable to be misapprehended, and therefore, this is not quite a satisfactory method. All persons can, however, understand the condition of the soil, both when saturated with, and devoid of moisture, and by making use of this we hope to render ourselves intelligible in stating, that the condition of the soil, when exactly intermediate between these two extremes, and most evenly maintained in that condition, is most generally adapted for the growth of plants; while, for their preservation in winter, a somewhat decreased proportion is sufficient, and when they are approaching to the state of inflorescence, a triflingly additional amount is required by most plants. Opinions are divided as to the particular period of the day at which watering should be performed; during the winter, and in the spring, it is generally allowed to be best applied in the early part of the day; and we may here add, that very much is gained at this latter season, by applying it of a temperature somewhat elevated above that of the atmosphere: during summer, we believe that, excepting only those periods when bright sunlight is beaming on the plants, any portion of the day is equally appropriate; and that particular period which would secure its application before the previously applied moisture becomes thoroughly evaporated, is, of all others, the most desirable. Soft water only should be made use of.

Potting.—The manner in which this operation is performed has considerable influence on the state of the soil, both with reference to the quantity of water necessary to be applied to it, as well as on the preservation of that equable state of moisture which it is desirable to maintain. Such being the case, it will be evident that much of the success of growing plants depends upon its proper execution. The principal requisites are, pots of suitable sizes, proper materials for drainage, and compost adapted to the nature and wants of the plants operated on. These all being in readiness, to proceed, take a pot, place a large piece of broken potsherd over the hole in the bottom, with its convex side downwards, and on this, add a layer of broken pots, bricks, or any similar porous substance, varying from half an inch to two inches in thickness, according to the size of the pot and the natural constitution of the plant; on this, place a handful or two of the roughest turfy or lumpy pieces of the soil or compost, (which should not have been sifted, but reduced by the hand to about the size of pigeons' eggs); and adding as much of the soil as will allow the plant to stand with the top of its attached mass of earth just below the level of the rim of the new pot, it will be ready for the reception of its new inhabitant. The preparation of the plant should next be attended to, by gently inverting its pot in the hand, and giving the edge of the latter a gentle tap on the potting-bench, so as to remove it without disturbing the roots, and holding the plant firmly in the hand in this position, displace the drainage which had before been used, and gently disengage the tips of the roots around the sides; then set it firmly in the new pot, and fill about it with the compost, pressing it in firmly about the old mass of soil, and between it and the sides of the pot; the surface must be finished off evenly, leaving the base of the stem about level with the rim, and the soil near the rim from a quarter of an inch to half an inch below it, according to the size of the pot. It is important that the soil should be sufficiently dry when used to bear compression without becoming adhesive.

It was once usual to repot a whole collection of plants at one time; but this routine method cannot be recommended, and is in great measure discontinued. The proper time for repotting is just when each plant has filled the soil about it with its roots, and just extracted from it the nourishment it contained, without having been left so as to have become exhausted, or for the roots to have become matted together and entangled; at any time, when this state is arrived at, (except late in the autumn, or in mid-winter), the plants should be repotted. As a general rule for plants in these situations, where space is limited, the increase in the size of the pots should not be too rapid; the smaller sizes may be increased one size at each shifting, and larger ones may be increased by two sizes at each shifting; this will afford space for gradual and permanent progression, although it will not secure the same rapid growth which would result from the adoption of larger pots. Free-growing plants, such as Fuchsias, Geraniums, &c. will require much more frequent shiftings than hard-wooded plants, such as Heaths and Epacrises; an annual renewal, or in some few cases, twice in that period, will be abundantly sufficient for these latter, while the former would probably need the same attention every month throughout the growing season.

Heat.—There will be no difficulty in maintaining a sufficient degree of heat for all the plants we shall recommend, and many more, except during the winter, and then the application of artificial heat will only be requisite in the case of severe frosts. It cannot be too strongly urged, that the least degree of artificial heat which will exclude frost, is sufficient for plants cultivated in green-houses; a greater degree than this only enervates them, and weakening their constitutional vigour, lessens their capacity to produce a continuance of bloom and of healthy development in the growing season. We have no doubt, that one of the easiest means of applying heat, would be by connecting a hot-water pipe with some of the domestic furnaces in daily use; where this could not be accomplished, an Arnott's, or a Vesta stove might be introduced; but in either case, it would be most important to provide against even the risk of an immoderate degree of heat. A falling thermometer, already at 40° Fah., with a clear sky, and frosty air, will, in general, indicate when the apparatus is in requisition; although the uncertainty of experiencing a considerable declension of external temperature during the night, may render it sometimes expedient to use precautionary measures, even when these "signs" are not to be observed.

Air.—Leaving out of question all speculative notions respecting the action of the atmosphere on the vegetable economy, the amateur may regard its application as being useful to him for two obvious purposes; first, to purify the confined internal air of his green-house, by carrying it outwards in its currents, and supplying its place by that which has not been submitted to circumstances likely to contaminate it: to effect this purpose, he may take advantage of every favourable opportunity during the winter and spring months to admit as large a portion as will be consistent with the exclusion of frost, and the excessive external humidity which sometimes prevails at this season. The other application of the admission of air, which is useful to the amateur, is to lower and modify the temperature of his confined atmosphere during hot weather and bright sunshine, which the opening of his structure will accomplish, by causing an obvious circulation and interchange of the internal and external air. The medium degree of heat which should be maintained in winter, may be taken at 45°; that of the spring months at 55°; and when this temperature is indicated by the thermometer, recourse should be had to the means we have just noticed, of reducing it, more or less, according to existing circumstances. During summer, a confined heat of more than 60° should not, on any account, be allowed.

General Remarks.—From what has been advanced, it will have incidentally appeared, that all plants require a seasonal arrangement of their treatment; or, in other words, an alternate period of rest and of excitement, varying, indeed, according to their particular constitution, but ever constant and necessary in its appropriate degree. In some plants this principle will be evinced by the death of one series of vital organs, viz. the leaves, and the return of vitality within the root or stem; and in the case of these, the seasonal treatment, which is naturally indicated, must be particularly and obviously attended to. In other plants, the leaves remain for a greater length of time, but their action during a portion of this is feeble, or even totally arrested for a period; and in cultivating these, it is needful to withhold stimulants whilst this condition remains, and reserve their application for a more favourable opportunity. The stimulants of vegetable growth are heat and moisture combined, and applied with proportionate reference to the individual character of the plants. The means of affording rest is obviously the converse of this—the conjoint reduction of the supply of heat and moisture in a palpable degree. Among the plants which will be recommended for this kind of structure, some few require rather minute attention with reference to the point just named; thus, for example, the Azaleas form their new growth immediately after flowering; consequently, at this period, the stimulants ought to be applied, and then again withheld gradually when the growth is maturing. Camellias, too, grow in the same manner, and therefore require similar treatment: after this growth is completed, and become partially firm or ripened, both Camellias and Azaleas are benefited by being placed for a period in the open air, in order that it may become more perfectly matured.

We have not yet referred particularly to the operation of pruning, and mention it here, rather to caution against indulging too freely in the practice, than to recommend its adoption. It is by no means a natural process when carried to the extent which is frequently recommended; and the only cases in which we can heartily speak favourable of its adoption, with reference to shrubby plants, is in the case of long, straggling, and rampant shoots, whose presence would be unfavourable to a neat and orderly appearance. Epacris, and Genista, in our list, may be referred to as examples of those which require such an occasional reduction of their branches: the majority, however, of those named, require little or no interference with their regular and natural form of growth. While, however, in the case of hard-wooded, shrubby plants, we repudiate an extensive interference with their natural form of growth, there are others among those called soft-wooded plants, which are improved in their appearance by their being sometimes (generally annually) considerably reduced. Thus, Geraniums should be cut down to a stump, a few inches only from the pots, after they have done blooming, in order to secure compact and bushy plants for the following season. Fuchsias require to be pruned in, close to a single upright stem, or their branches become crowded together and confused, and the blossoms are not exhibited to advantage. Aloysia (the Lemon-plant) requires to be cut quite back, or it will become straggling. Roses generally require some pruning, or they become too large for their situations, and this should generally consist in the removal of an entire branch when they are liable to become crowded. In these, and many other cases, pruning may be resorted to as an expedient for the sake of securing certain desirable qualities which would not otherwise be obtained.

We have appended a list of creeping plants, which are adapted to extend over the rafters, and thus ornament the roof of the green-house; and we consider the proper introduction of such plants to be a matter of some importance. It can scarcely admit of doubt, that it is desirable to increase the display of flowers in these small structures, as far as can be practicable; and therefore, we think it quite sufficiently evident, that not only the platform, and stages, and shelves, which may be erected, should furnish their portion of decorative surface, but also, as far as possible, every part of the structure should minister to the general effect. Besides this, the appearance of creepers trained over the roof in a judicious manner, is exceedingly graceful; their rich verdant festoons, stretching from pillar to pillar, (these, too, enveloped in living beauty,) impart a most charming variety to the assemblage, and afford an admirable substitute to the eye, for the stiff formality of the naked roof. Some of these plants, too, are among the most gorgeous and splendid in the vegetable kingdom; and it is only when thus allowed to extend themselves unrestrainedly, or at least, without oppressive restriction, that their beauty and loveliness become developed in a superior degree. Plants of this nature, when introduced for this purpose, require no very extraordinary attention; they may be grown by planting them in boxes, sunk below the floor at those points where it is desirable to introduce them, and these, being filled with appropriate soil, will be found well adapted for their intended use. The boxes may be constructed of any ordinary materials, but slate would have a decided preference, if neatness, economy, and adaptation to the purpose are taken into consideration. These plants may also be grown by planting them in large pots or boxes, placed at the bases of the pillars, or where they may be required. In either of these cases, the quantity of soil, and consequently of food, which would be available, being limited, while the branches were allowed to extend freely, it would be requisite occasionally to apply small proportions of liquid manure, in a diluted state, in order to maintain them in an even state of vigour. Of course, the principles and conditions of growth to which we have already referred, must be attended to in this case. For the most part, the pruning of these creeping plants should be performed in the winter season, or the general period of rest. There are two distinct methods with reference to woody and permanent plants, which may be followed, according as they may be adapted to the particular character of the plants; the one is to remove the annual shoots, close by where they issue from the stem; this is termed "spur-pruning," and is well adapted to a great number of plants; the other method is, to preserve a considerable length of the well-ripened shoots of the preceding season, and remove entirely a corresponding portion of the old flowering stems, which is better adapted to some plants than the former: in this latter case the younger shoots are substituted for the older ones. The Wistaria may be taken as an example of those plants which are adapted to the former method; whilst Clematis, Bignonia, and Passiflora, will afford instances of the latter. There are some other plants, of annual duration, which require annual renewal; and some few of an herbaceous nature, which are also best when annually introduced in the state of young plants.

For the cultivation of Ferns (the class of plants we should recommend for covered balconies, having a northern aspect) we should strongly advise the erection of artificial rockwork, among which the Ferns should be planted in clefts, and on ledges, purposely formed for their reception: the effect of such an arrangement as this, when viewed from the windows, would be very interesting and picturesque. The spaces provided for the plants should be filled with a compost of equal parts of the turfy portions of good loam and peat, among which a little silver sand should be mixed; this soil, if sufficiently drained to prevent the stagnation of water, will be found to be suitable to the growth of the majority of the species; the perfect drainage is an essential point, for although very much benefitted by dampness in the atmosphere, as we must presently notice, they are exceedingly impatient of water when stagnant in the soil, and in contact with the roots. Most of them delight, as we have said, in a humid atmosphere; some, indeed, of the more robust, are apparently indifferent in this respect; but others, of the more delicate kinds, will scarcely be found to thrive without a considerable degree of vapour in the air around them. As this would, however, be of itself inconvenient in close connexion with the domestic apartments, much of the inconvenience which would arise may be obviated by covering the more delicate kinds with transparent glasses, which, while they would maintain that portion of the air in direct contact with them in a calm and equably moistened state, would render moisture exterior to the glasses less necessary, and would not, in any way, obstruct the inspection and examination of the plants.

In giving a list of plants which are adapted for cultivation in such situations as these, we confine ourselves to a brief selection, illustrating the particular character of those which are the most suitable for our object, rather than attempt to enumerate *all* that may be successfully chosen. This latter would extend our list far beyond the limits which our work will admit, and would, in truth, answer no good end; it must not, therefore, be regarded as a list full and complete in itself, but as admitting of augmentation and enlargement, to meet the tastes or the means of particular individuals. We might have introduced into it more rare and valuable plants than those we have selected, but our object has been rather to collect the least difficult in cultivation.

We shall in this place enumerate, besides the names of the plants, their season of flowering, and the most generally proper soil for each, omitting, in this place, any formal mention of the principles of cultivation.

List of Plants for a COVERED BALCONY, *from which frost is excluded by artificial means.*

ACACIA ARMATA, (armed Acacia.)—Flowers in April: loam and peat.

ACACIA PUBESCENS, (downy Acacia.)—Flowers in March.

ACACIA VERTICILLATA, (whorl-leaved Acacia.)—Flowers in March and April.

ALOYSIA CITRIODORA, (citron-scented Verbena.)—Flowers in July and August: light rich loam.

AZALEA INDICA, LEDIFOLIA, (white Indian Azalea.)—Flowers in April: sandy peat.

AZALEA (I) PHŒNICEA, (purple Indian Azalea.)—Flowers in April.

AZALEA (I) SMITHII, (crimson Indian Azalea.)—Flowers in April.

CAMELLIA JAPONICA, ALBA-PLENO, (double-white Japan Rose.)—Flowers in April and May: sandy loam.

CAMELLIA (J) ANEMONÆFLORA, (anemone-flowered Japan Rose.)—Flowers in April and May.

CAMELLIA (J) COLVILLII, (Colville's Japan Rose.)—Flowers in April and May.

CAMELLIA (J) IMBRICATA, (imbricate-petalled Japan Rose.)—Flowers in April and May.

CEREUS SPECIOSISSIMUS, (most handsome Cereus.)—Flowers in June and July: rich loam.

CHOROZEMA VARIUM, (varied Chorozema.)—Flowers in May and June: loam and peat.

CORONILLA GLAUCA, (glaucous Coronilla.)—Flowers in July and December: loam.

CRASSULA COCCINEA, (scarlet Crassula.)—Flowers in July and August: light rich loam.

DAPHNE HYBRIDA, (hybrid Daphne.)—Flowers all the year: loam and peat.

DILLWYNIA ERICOIDES, (heath-like Dillwynia.)—Flowers in May: sandy peat and loam.

DIPLACUS PUNICEUS, (crimson shrubby Mimulus.)—Flowers all the year; sandy loam.

EPACRIS GRANDIFLORA, (large-flowered Epacris.)—Flowers in April and May: sandy peat.

EPACRIS NIVALIS, (snow-white Epacris.)—Flowers in March and April.

EPIPHYLLUM SPECIOSUM, (handsome flat-stemmed Cactus.)—Flowers in June: rich loam.

ERICA BOWIEANA, (Bowie's Cape Heath.)—Flowers from August to December: sandy peat.

ERICA CAFFRA, (Caffrarian Heath.)—Flowers from February to October.

ERICA CRUENTA, (blood-coloured Heath.)—Flowers from July to September.

ERICA GRACILIS, (slender Heath.)—Flowers from February to May.

ERICA HYEMALIS, (winter-flowering Heath.)—Flowers in February and March.

ERICA VENTRICOSA, (ventricose-flowered Heath.)—Several varieties. Flowers in June and July.

FUCHSIA GLOBOSA, (globe-flowered Fuchsia.)—Flowers all the summer: rich loam.

FUCHSIA MICROPHYLLA, (small-leaved Fuchsia.)—Flowers all the summer and autumn.

GENISTA CANARIENSIS, (Canary-Island Genista.)—Flowers in March and July: rich loam.

GENISTA RHODOPHNÆ, (rose-scented Genista.)—Flowers in March and April.

HYDRANGEA HORTENSIS, (garden Hydrangea.)—Flowers in July: loam or peat.

MYRTUS COMMUNIS, FLORE-PLENO, (double-blossomed Myrtle.)—Flowers in July and August: rich loam.

PIMELIA DECUSSATA, (cross-leaved Pimelia.) Flowers from April to July: sandy peat and loam.

PIMELIA INCANA, (hoary-leaved Pimelia.)—Flowers in May.

POLYGALA CORDIFOLIA, (heart-leaved Polygala.)—Flowers in May and June: peat and loam.

POLYGALA GRANDIFLORA, (large-flowered Polygala.)—Flowers in June and July.

ROSA INDICA ODORATA, (sweet-scented China Rose.)—Flowers in June and July: turfy loam and peat.

ROSA INDICA DEVONIENSIS, (Duke of Devonshire's Rose.)—Flowers in June and July.

SIPHOCAMPYLUS BICOLOR, (two-coloured Siphocampylus.)—Flowers from August to October: rich loam.

STYLIDIUM FASCICULATUM, (bundle-leaved Stylidium.)—Flowers in June and July: sandy loam and peat.

To these may be added, forced Hyacinths, Narcissus, and Mignonette; Geraniums, Roses, Fuchsias, Chrysanthemums, and some of the curious and grotesque-looking objects which abound among succulent plants. Such as the following should be planted so as to extend over, and cover the pillars and rafters; and thus, at the same time ornament the roof, and afford shade to such plants as might require to be screened from the direct rays of the sun. Some of the smaller-growing kinds, indicated thus (*) might be grown in pots, and trained on appropriate wire trellises; columnar ones, such as those represented in a former page of this work, are the most appropriate for the situation and the plants, and by far the most pleasant to the eye.

Bignonia capreolata, (tendrilled Trumpet-flower.)—Flowers in June: rich loam.

Clematis florida bicolor, (Siebold's Japan Clematis.)—Flowers from June: rich turfy loam.

Clematis cœrulea, (celestial-blue Clematis.)—Flowers from May.

Ipomœa rubro-cœrulea, (red and blue Ipomœa.)—Flowers from July: rich loam.

*Ipomœa ficifolia, (fig-leaved Ipomœa.)—Flowers from May.

Kennedya monophylla, (one-leaved Kennedya.)—Flowers from May: peat and loam.

Kennedya coccinea, (scarlet-flowered Kennedya.)—Flowers from June.

*Lophospermum scandens, (scandent Lophospermum.)—Flowers from June: rich loam.

Maurandya Barclayana, (Barclay's Maurandya.)—Flowers from May: rich loam.

Maurandya alba, (white-flowered Maurandya.)—Flowers from June.

Passiflora cœrulea, (common blue Passion-flower.)—Flowers from July: sandy loam.

Passiflora incarnata, (flesh-coloured Passion-flower.)—Flowers from June.

Philibertia grandiflora, (large-flowered Philibertia.)—Flowers from June: loam and peat.

*Sollya heterophylla, (various-leaved Sollya.)—Flowers from May to September: peat and loam.

*Sollya linearis, (linear-leaved Sollya.)—Flowers from May to September.

*Tropæolum brachyceras, (short-spurred Tropæolum.)—Flowers from May: sandy loam.

*Tropæolum tricolor, (three-coloured Tropæolum.)—Flowers from May.

*Tropæolum pentaphyllum, (five-leaved Tropæolum.)—Flowers from June.

Wistaria sinensis, (Chinese Wistaria.)—Flowers in April: rich loam.

These may be taken as examples of the plants which may be successfully introduced to the situation under notice. We have already remarked that the same class of plants will not so satisfactorily succeed when the balcony faces the north: in these situations, Ferns, and similar plants, would form no despicable exchange for flowering-plants; some might be studded on artificial rockwork, placed against the walls and breaking up their monotonous regularity, and others planted in rustic baskets, or fastened on blocks of wood, might be suspended from the roof, according as their natural habits might adapt them for one or the other of these positions. It is hardly possible to conceive a more beautiful sight than such an assemblage, and, if it were thought desirable, plants in flower might, from time to time, be introduced, so as to keep up a succession of bloom throughout the greater part of the season. It will be entirely unnecessary to give a detailed list of Ferns, for any of those which are not stove species, will succeed admirably, and all of them are beautiful and graceful in their foliation: there are several kinds of Lycopodium, also, which are well adapted to accompany them.

THE OPEN BALCONY AND WINDOW LEDGE.

Open balcony.—The class of plants, selected for the decoration of this situation, is that of hardy evergreen and flowering shrubs: it will be obvious, that no other than hardy plants would survive in such places; and no other than evergreens would impart an aspect of cheerfulness throughout the gloom of winter. To render them perfectly adapted to their station, the plants should be selected when of moderate size, in preference to those which are larger; and they should, at this early stage of their growth, be pruned sufficiently to ensure their compact form, although not so much so, as to destroy the natural habit they assume. Towards the end of the summer, (say, about the end of August,) they should be taken up from the open ground, and placed in pots sufficiently large to receive the roots without crushing them; nothing at the outset can more forcibly minister to their mortality, than a thoughtless sacrifice of the roots, with a view to force them into pots of smaller capacity; for, in this case, as in everything else connected with the growth of plants, a smaller portion of labour, well applied, will produce more satisfactory results, than more extended operations, less carefully attended to. After potting, the plants should be placed in some shady place for a week or two, until they have re-commenced growing; and then, they may be removed to their permanent positions, or to any convenient place to await their removal thither.

The operation of potting, and the attention which plants in general require, with regard to the administration of water, have been noticed in a former part of this paper, so that it will be unnecessary in this place to make a repetition of what has been there stated. There is, however, a contingency connected with the situation now under consideration, which it will be necessary to refer to:—being entirely situated out-of-doors, the plants will receive whatever rain may fall; this will sometimes be sufficient to maintain an equable moisture, but, at other times, will be found to be, either, far more than is requisite, or less than a necessary supply; it is the former of these two liabilities that particular attention must be directed to, as the want of water will, at all times, more obviously present itself, and will in consequence be less likely to become a source of injury. The point, then, requiring especial attention, consists in providing proper and sufficient drainage to prevent the stagnation of the water about the roots at these periods; and this care is especially necessary to their safety through the winter. Perhaps the best means of securing this end, and of ministering also to their nourishment in times of drought, is to add a few pieces of freestone among the soil, and to use this latter in a rough turfy state,—by no means removing the stones, or larger portions, or rendering it fine by any mechanical process. In summer, and also during a portion both of autumn and spring, the plants will be liable to suffer from want of water, not only in time of drought, but also in many cases after heavy rains; the former will suggest of itself what is required, as well as the frequency of its application; but in the latter case the real state of the soil will be less obvious—the rain would, in many instances, be averted by the leaves, and thus the surface only would become moistened, whilst the interior continued to be in a state of absolute dryness: this can only be ascertained by direct observation. Plants of this nature will be much benefited and refreshed by frequent dashings and sprinklings of water over the foliage, in the evenings of hot dry days in summer. As a means of protecting the roots both from heat and drought in summer, and from cold in winter, the effects of which are severally manifested on the foliage, there would be considerable advantage resulting from placing the pots, containing the plants, within ornamental vases, or stands; or a double pot, of which several kinds are manufactured, would serve a similar purpose.

There are many plants which might be added to those mentioned for this situation during the summer, for the sake of decoration and variety: they are such as may also be chosen for the *window-ledge*, and therefore one general notice of them will be sufficient.

WINDOW-LEDGE.—We are here introduced to a class of plants which require a more decided degree of preparation for their allotted station: this can, however, be accomplished by the agency of a common garden-frame, as it is only protection from frosts, and a very trifling degree of assistance in spring, which is requisite, to secure all that need be desired.

Pelargoniums, and plants of similar habits, must be preserved by inducing a quiescent state of the vital functions, early in the autumn, and subsequently removing them beyond the reach of frost. To produce this state of inactivity in the vital powers, nothing is requisite but the gradual cessation of watering from the beginning or middle of October, reducing the supply in a regular manner, so that by the end of November, it may be altogether withheld; the plants, in the mean time, must be kept from being injured, even in the slightest degree, from the frosts which sometimes occur about this period; afterwards they should be placed away quite dry in any situation from which frost can be effectually excluded. Light is not an essential requisite in these winter quarters; although, where it can be secured, it will not be injurious. In such a position, the plants should remain until about the end of February, no other care, beyond what has been already noticed, being afforded them, except as far as possible to prevent their being excited into growth. About that time they should be taken out, and the earth being carefully removed from them, they should be potted singly into pots, as small as the roots will admit of, the branches pruned and cleared of all decayed or superfluous portions, and then removed to the frame, which from this time comes into requisition: here they should be shut up closely, with very slight applications of water; and night-coverings to secure them from frost; and they may remain, without further trouble, until they have obviously commenced growing; they may then be repotted into larger pots, air gradually admitted, and the supply of water increased, as the season will permit; the repotting being repeated when it becomes requisite. About the middle of May, or the beginning of June, as the weather and season may be favourable or otherwise, they should bear full exposure, and may be removed to occupy their summer quarters. A slight degree of heat, after potting, added to the protection afforded by the frame, would be an improvement, though it is not absolutely necessary.

Fuchsias, Calceolarias, Verbenas, &c. will do well enough with treatment somewhat similar, varying the extent to which the drying process is carried, according to their respective natures: the former, too, being deciduous (that is, shedding their leaves annually), may be preserved in any position devoid of light; the others will be greatly benefited, if light, as well as protection, is afforded to them. Such plants as Myrtles, and China Roses, may be preserved inside the window, if their presence is thought desirable, provided the room is not kept too close and warm, and light can be freely admitted to them: otherwise, they must be removed to a frame for the winter, and protected during that period from frost, by means of coverings at night; the covers being daily removed to admit light, and the frame daily opened to allow the escape of the confined and accumulating moisture.

The creepers named in the list, or any similar ones that may be chosen, should be annually raised from seeds sown in pots, and placed inside the window, or any warm place, and subsequently cultivated in the frame; in this case, a slight degree of artificial heat would be a valuable adjunct to the frame: perhaps, after all, it would be best to procure plants of these from a nurseryman, or else from some friendly store, where the advantage of a green-house renders their preservation in winter less vexatious and precarious.

Mignonette is a great favourite for the window, and, with the assistance of a frame, it may be had all the year in bloom. To secure this, a portion should be sown about the beginning of September, to come into bloom during the winter: others sown in February would follow; and from this time a few pots should be sown each month, to keep up a complete succession. The seeds should be sown thinly in pots, about five inches in diameter, and covered over about a quarter of an inch with fine soil: when they have vegetated, the weakest of the plants should be removed, leaving about a half-dozen of the strongest of them to come into bloom; from each sowing, some of the pots should be selected and all the strongest plants removed, the smaller ones being left, these will come into bloom later than the others, and the succession will thereby be rendered more perfect.

The Musk plant (*Mimulus moschatus*) may be had in perfection, by annually repotting some of its creeping root-stems early in the spring; and placing them either on the interior ledge of the window, or in a frame, in either of which situations it will readily succeed: its season may be prolonged, during the summer, by taking a branch or two every month, and planting them as cuttings, in small pots, placed in a shady cool place; this will extend their vigour over the whole season, and their peculiar fragrance renders this somewhat desirable.

For those who have not the convenience of a frame at hand, there are other methods which may be adopted. The most simple, and, at the same time, successful plan, is to preserve the plants, as already directed, throughout the winter; and, on the approach of spring, to expose them very gradually to light and air, commencing with the interior of the window, and then exposing them on the exterior; in the latter case, they must, at first, for some time, be removed inside at night, and during all rough and stormy weather, and exposed only when the air is calm and warm. This method, it must be confessed, is attended with some care and trouble; but the success which it will ensure, will be such as fully to counterbalance this inconvenience in the estimation of those who are "fond of flowers." The rationale of procedure should be something like the following:—During winter the plants should be kept as perfectly dry as they can be, to avoid the absolute shrivelling up of the branches, and as cool as would be consistent with the perfect exclusion of the frost: this will keep them in a state of absolute rest, and this condition being secured, everything else becomes of secondary importance, until the return of the spring; light may indeed be supplied to those which have their foliage persistent, but, in the case of those which shed their leaves, this is not of any importance. On the return of spring (say about the end of February) the plants should be taken out, and supplied with a little more heat and moisture; but these must be very sparingly applied, and very gradually increased: they must now also be exposed to light; when growth is commencing they should be repotted, and, in doing this, as much as possible of the old soil should be removed, and a portion of the roots, also, if they are numerous. The pots should be selected, as small as the roots can be conveniently placed in, to allow of some additional shiftings as they increase in growth. From this time (which we may assume to be about the middle of March) they should be exposed to the open air during as great a portion of the day as the weather may be mild and serene; at other times they must be kept within doors, but fully exposed to light, and as far removed from the influence of *heat*, as may be possible in a living room. Water must be given in very small libations, more frequently applied, as the process of evaporation is favoured by clear and warm weather, and less so when evaporation is slow and imperfect; it should, however, in this stage of growth, *never* be applied when the soil is already obviously in a moist state. The alternation of exposure by day, and protection at night, must go on without intermission, though in varying proportions; the former will gradually become the principal, and most important feature, until at length the period of vicissitude is past, summer weather becomes settled in, and the plants are capable of full and unlimited exposure. This course of treatment will ultimately be productive of results equally satisfactory as the preceding, but is attended with a greater degree of trouble, throughout the whole of the spring months.

Window plants, generally, require liberal and frequent supplies of water in summer. The peculiar nature of their position renders them subject to very extensive and rapid evaporation, and unless constant and unremitting care is bestowed in making an adequate return for this loss of moisture, the plants will most certainly suffer; and the result will be the production of the miserable, starved-looking plants which are frequently seen, instead of fine, healthy, vigorous, well-bloomed plants, which are the certain reward of due attention. With proper care in this respect, and a timely renewal of the soil and the pot, when requisite, we know of no place where the generality of plants may be brought to a greater degree of perfection.

List of Plants for an OPEN BALCONY.

ARBUTUS UNEDO, (Strawberry tree), and its varieties.—Flowers in September: sandy loam.

AUCUBA JAPONICA, (Japan Aucuba.)—Flowers in June: loam.

BUXUS BALEARICA, (Minorca Box.)—Flowers in July: loam.

BUXUS SEMPERVIRENS, (evergreen Box.)—Flowers in April.

CUPRESSUS PENDULA, (pendulous Cypress.)—Flowers in May: sandy loam.

EUONYMUS JAPONICUS, (Japan Spindle-tree.)—Flowers in July: loam.

EUONYMUS JAPONICUS FOLIIS VARIEGATIS, (variegated Japan Spindle-tree.)—Flowers in July.

ILEX AQUIFOLIUM AUREO-MARGINATUM, (gold-edged common Holly.)—Flowers in May: loam.

ILEX BALEARICA, (Minorca Holly.)—Flowers in May.

ILEX DAHOON, (Dahoon Holly.)—Flowers in May.

JASMINUM REVOLUTUM, (revolute flowered Jasmine.)—Flowers in June: loam and peat.

JUNIPERUS RECURVA, (recurved-branched Juniper.)—Flowers in May: sandy loam.

JUNIPERUS EXCELSA, (tall Juniper.)—Flowers in May.

JUNIPERUS VIRGINIANA, (red Cedar.)—Flowers in May.

LAURUS NOBILIS, (common Bay-tree.)—Flowers in April: loam.

LIGUSTRUM LUCIDUM, (Chinese Privet.)—Flowers in July: loam.

MAHONIA AQUIFOLIUM, (holly-leaved Barberry.)—Flowers in April: peat and loam.

PRINOS GLABER, (smooth-leaved Winter-berry.)—Flowers in July: sandy loam.

PHILLYREA ANGUSTIFOLIA, (narrow-leaved Phillyrea.)—Flowers in May: loam.

PHILLYREA LATIFOLIA, (broad-leaved Phillyrea.)—Flowers in May.

RUSCUS ACULEATUS, (prickly-leaved Butcher's-broom.)—Flowers in June: loam.

TAXUS BACCATA FASTIGIATA, (Irish Yew.)—Flowers in April: loam.

THUJA ORIENTALIS, (Chinese Arbor-vitæ.)—Flowers in May: loam.

THUJA PLICATA, (plaited-branched Arbor-vitæ.)—Flowers in May.

ULEX EUROPÆA FLORE-PLENO, (double-flowered Furze.)—Flowers in March: loam.

ULEX NANA, (dwarf English Furze.)—Flowers in March.

VIBURNUM TINUS, (Laurestine.)—Flowers in February and July: sandy loam.

VINCA MAJOR, (larger Periwinkle.)—Flowers in June: loam.

YUCCA RECURVA, (recurved-leaved Adam's needle.)—Flowers in July: peat and loam.

YUCCA FLACCIDA, (weak-leaved Adam's needle.)—Flowers in July.

We have introduced to this list the time at which the plants usually come into bloom, in consequence of some of those named being showy when in flower; but they would be cultivated rather for the sake of their evergreen foliage, than for their flowers. They should also be in the state of young and healthy plants, of a size adapted for being grown in pots.

The plants here enumerated are intended as articles for permanent decoration, supplying an occasional sprig of blossom, and a continual mantle of verdure: during one portion of the year, it is only such as these which could be preserved; in summer, however, others may be introduced for the sake of ornament and variety, and these might consist of such as those named in the following list, any of which would succeed:—

List of Plants, adapted for cultivation on the WINDOW LEDGE *during summer.*

Those marked thus (*) are climbing plants, adapted for training up the sides of the sashes.

ALOYSIA CITRIODORA, (Lemon-scented Verbena.)

CHINA ROSE—Any of the free-blooming varieties.

CALCEOLARIA ANGUSTIFOLIA, and others.

FUCHSIA GLOBOSA, F. MICROPHYLLA, F. FORMOSA ELEGANS, and F. VENUS VICTRIX.

*LOPHOSPERMUM SCANDENS.

*MAURANDYA BARCLAYANA, ALBA, and ROSEA.

MIMULUS MOSCHATUS, (Musk,) and GUTTATUS.

MYRTLE, double-blossomed.

PELARGONIUM, any of the compact free-blooming varieties.

Reseda odorata, (Mignonette.)

Scarlet Pelargonium, Frogmore seedling, General Tom Thumb, and others

*Tropæolum majus astrosanguinea, (m.) Shillingii, Minus, and Aduncum.

Verbena, many of the varieties.

It must be remembered, that the plants are adapted only for the summer season, and the milder portions of spring and autumn; they will therefore require to be annually renewed, or preserved from injury during the winter months; during this latter season, their place must be supplied by small evergreen hardy plants, similar to those named in the preceding list.

MANAGEMENT OF PLANTS IN WARDIAN CASES.

The principal peculiarity in these structures is, that the plants, together with the soil in which they grow, and that portion of the air immediately surrounding them, are directly covered by a close transparent case; the object of which is to prevent any very considerable or rapid interchange between the ordinary atmosphere, and that which is in contact with the plants, at the same time that the least possible obstruction is offered to the radiation of light, about the plants. We have already offered some remarks on the structure of these cases, as far as regards their outward appearance and effect; our present object, is to notice especially the general arrangements which affect the well-being of the plants which may be placed within them.

Although the principle on which these cases were first constructed and applied to the cultivation of plants, was avowedly that of forming a close atmosphere, not liable to sudden changes and reversion, yet we cannot regard the idea which is apparently entertained by some persons, that no deviation from this rule is tenable and justifiable, as having any very strong foundation. It by no means follows, that because they are professedly closed up, under ordinary circumstances, when filled with plants, they may not be occasionally opened, for any purpose which the owners may require: indeed, we conceive it to be as clear as it possibly can be, that any notion or arrangement, having such a tendency, would destroy a great portion of the interest which their possession would be likely to excite in an amateur cultivator. The question whether or not plants will continue to grow, if kept closed up, under these circumstances, is not by any means involved, science having repeatedly and satisfactorily answered it in the affirmative: it is only the application of the scientific principles involved, in such a way as to secure the ends he has in view, that the amateur cultivator has to consider. To ensure the most perfect success, according to the scientific questions involved, there is such an equable balance and adjustment of the agents employed required, that, in ordinary cases, no other than scientific persons could be expected to bestow the requisite care and attention; but this point having been satisfactorily settled, and the means being made sufficiently accessible, it is only the practical application of principles, and their adaptation to particular cases and requirements, that can have any interest, or be at all useful to those who cultivate a few choice flowers, as a source of exhaustless gratification. So long as they find the means of gratification, it is malicious to sneer at the path they may have chosen to search for it in, and if they choose a successful one, it is idle to oppose them. They require to have living and withal thriving plants, in their living rooms, and they are warned, that the atmospheric conditions required for their own health and comfort, are most unfavourable to such a result; and that the only resource by which to secure their comfort and gratify their desire, is to enclose immediately about their plants such atmospheric conditions as will be suited to their existence: the researches of others into the deep things of science has supplied them with the information, that these conditions can be so far supplied, as to enable them to cultivate such plants as they may esteem, without exposing themselves either to inconvenience or injury; and that the requisite conditions can be fulfilled to a sufficient degree to secure their purpose without the exactitude which science itself would require: acting under the impulse of such information as this, they require their Wardian cases to become the repository, not the prison of their plants. The conclusion at which we arrive is, that cases constructed with a moveable door are decidedly preferable to those not so constructed, for all the purposes of the amateur; firstly, because he is not likely minutely to apportion the amount of moisture, nor attend to the mechanical composition of the soil, so as to secure the perfect working of the apparatus if kept entirely closed—whilst the opening case would admit of any after-regulation that might be needed; and secondly, because, in the event of the plants being required to be changed, it could be far more easily accomplished in the open than in the closed case.

Whatever difference may be admitted in their outward construction and appearance, they all agree in being formed of two parts,—a close deep box to contain the soil, and a glass frame which covers the plants. The box should be formed of durable material, about one foot in depth, in order to allow sufficient space for a proper quantity of soil for the plants, and a due proportion of drainage to be placed beneath it; this drainage, it must be remembered, is of very great importance, having a twofold office to fulfil; first, to take away the superfluous moisture from the soil, when it has been applied in too great abundance; and secondly, to serve as an absorbent and perpetual reservoir of moisture, from which it may be continually given out to the soil, for the use of the plants, as its supply becomes lessened by gradual evaporation. The mechanical portion of this operation of draining, should be thus performed:—In the bottom of the box (the inside of which should be coated with pitch, as a preservative) place a layer of porous material, such as broken bricks, flowerpots, clinkers, sandstone, or any such like substance; these materials should be broken to about the size of an ordinary fowl's egg, and may be used to form a layer about three or four inches in thickness; on this, place about two inches in thickness of similar material, in a somewhat more reduced state. Above this open material, place a layer of broken turf, of a light, somewhat sandy loamy texture, and immediately over it the prepared compost according to the kinds of plants which it is intended to cultivate.

Whatever the character of the plants may be which are selected, we think some portion of rockwork, a few rough stones at least, should form part of the interior arrangement; in some instances, as with Ferns, these may be increased so as to occupy nearly the whole surface. Besides the advantage of their picturesque effect, when properly regulated, they would in all cases be found to act beneficially, inasmuch as they would favour the regular distribution of moisture both in the soil and atmosphere, by absorbing it in considerable quantity, and then giving it out again by evaporation. Any of the various sandstones will be found suitable for this purpose; it should be broken into blocks of convenient size, but of course, being applied to so small a space, they ought not to be very large. It should be borne in mind, in making a selection of plants, that although a very miscellaneous group may be successfully grown in company with each other, yet a greater degree of perfection individually may be attained by selecting those which are somewhat assimilated in the natural features of their character; thus, for example, the Ferns, or Ferns with Orchidaceous plants, may be grown very successfully together; but neither would so well associate with Cacti, whereas the latter would grow very well in company with any of the more hardy green-house plants. As a general rule, it may be advanced, that those plants which require either a more abundant or limited supply of moisture, are those which should be placed together.

In the arrangement of the plants some care should be taken to produce artistical effect, and to avoid tameness and formality, even though the field of operation is but of limited extent; thus the denizens of the forest, towering aloft, peerless and majestic, should have their appropriate representatives, whilst beneath them, the tender herb should appear as though naturally seeking their shade, or the epiphytes growing against their stems, should seem to be clinging there for support. Some species may be represented as growing on rocks, others on the stumps of trees; some basking in the full glare of the sun, and others reposing in some peaceful shade. Now, all these little natural and intensely interesting characteristics, may be very successfully and pleasingly exhibited, even within the limited boundary of a Wardian case: it only requires a little forethought and discrimination in the choice of subjects, and some degree of taste in their arrangement.

The soil which is made use of should, as much as possible, consist of the turfy portions of its kind, obtained by paring and collecting about three inches in depth of the surface, of the respective kinds; after collecting, this should be spread out, and dried sufficiently to kill the plants naturally growing in it, and is then fit for use; but if it is not required for immediate use, it should be collected into small parcels, and protected from heavy rains, so as not to become soddened by an excess of moisture. Before using, it should be chopped into small portions, about the size of pigeons' eggs, and should by no means be reduced to a finer state, either by sifting or any other process; but should be used in this rough open state.

The roots of the plants, if they have been kept in pots previously to the time of planting in the case, should then be carefully released and spread out, and the soil evenly placed about them: the soil should then receive a gentle but thorough watering, and afterwards the glass frame should be put on over the whole. By a beautifully alternating process of evaporation and condensation, a single application of moisture will be found to be sufficient for a considerable length of time, regulated, of course, by the degree in which the glass frame will prevent evaporation, in consequence of its close construction. The heat of the sun by day will cause a steady and gradual evaporation from the soil during that period; and this moisture, after rising among the foliage, and in contact with every part of the plants, and there ministering to their necessities, will be as steadily and gradually condensed, as it comes in contact with the cooler surface of the glass, when the sun has left it, or during the evening and night: in this condensed form the moisture is restored to the soil, to be again and again submitted to a similar process. When the supply becomes exhausted, or sensibly diminished, before the growing season is past, a fresh application will become necessary; and this will, in its turn, become subjected to a similar alternation.

It is somewhat important, that the soil which is made use of should be as pure as it can be obtained, and as far as possible unmixed with substances which, in undergoing decay, will evolve gases which are injurious to vegetation: the close nature of the structure renders this precaution necessary; for otherwise the accumulation of these noxious qualities would endanger the well-being of the plants; when, however, ordinary care is bestowed at the outset, but little fear of inconvenience from this source need be entertained.

Sometimes, in consequence of the more rapid growth of one plant than another, it becomes necessary to re-arrange the contents of the case, and perhaps altogether to remove some of the largest of the plants, and replace them by smaller ones, either of the same, or of different kinds. The variety which it thus becomes practicable to secure, will be found to be very pleasing; and in fact, without such a re-arrangement occasionally effected, the assemblage would perhaps soon cease to give rise to emotions of satisfaction, in consequence of the overgrowth of some plants having the effect of weakening, or perhaps destroying, the more delicate, and therefore interesting, plants. In general, an annual re-arrangement judicially effected, will be found to be sufficient.

The case should at all times be placed as much as possible within the influence of light: it might, however, be well to avoid the direct rays of the sun, when they are powerful, for the plants being necessarily subjected, during a great portion of the day, to less than a natural and ordinary degree of light, might be liable to suffer, in consequence of their delicate nature, which is occasioned by the circumstances in which they are placed. The occasion of the plants obtaining less than a natural share of light, the grand agent in vegetable development, will be found to consist in the position they occupy; first, within a room, where light cannot be equally diffused on every side, and then within another lodging-house, which, even if formed of the purest and most transparent glass, would again refract and weaken the rays of light that had already been partially broken in passing through the window. With this general exception, and another provisionally made in the cases of Ferns, which grow equally well, or better, in a shady place, we may assume, that the window, or as near it as possible, would be the most appropriate place in which to station them. We may as well add, that in no case ought the glass forming these cases to be allowed to become covered, either internally or externally, by an accumulation of filth, thus obstructing the passage of light, and also preventing a full inspection of the plants.

On the approach of winter, the position of the case, with respect to temperature, will require some attention: mere protection from frost is not sufficient for the majority of the plants which would be selected; at the same time, in consequence of the closeness of the atmosphere, the temperature does not require to be elevated to the degree usually afforded to the same class of plants in hot-houses. For the most part, an even temperature of about 60° maintained during the day, would be quite sufficient during the winter; and in the summer season, they might be allowed to accommodate themselves to the existing degree of heat. One thing should be particularly avoided, and that is a high night temperature; if possible, during the night, it ought to be several degrees lower than by day; consequently, whatever means may be taken to keep up the necessary degree of heat, should be applied principally in the day time, when the light is sufficient to assimilate the food, which is taken up into the system under its influence; an opposite course—that of forcing the plants to the exercise of these functions, when the most necessary and important condition is wanting, can have no other effect than that of weakening the constitutional vigour of the plants, and if persisted in, of ultimately destroying both it and them.

List of Plants adapted for being grown in the interior of living rooms, in Wardian Cases.

Those marked thus (*s*) may be planted, some in pots and baskets, and some on blocks of wood, and suspended from the roof; those marked (*r*) are suitable for being planted on portions of artificial rock-work, elevated above the surface of the soil.

Achimenes longiflora, (long-tubed Achimenes.)—Rich light loam.

Achimenes rosea, (rosy Achimenes.)

r Adiantum formosum, (handsome Maiden-hair.)—Sandy peat and loam.

r Adiantum hispidulum, (slighty hairy Maiden-hair.)

r Adiantum Moritzianum, (Moritz's Maiden-hair.)

r Allosurus crispis, (curled Allosurus.)—Sandy loam.

s Aspasia epidendroides, (epidendrum-like Aspasia.)—Turfy peat.

r Aspidium mollis, (soft Shield Fern.)—Sandy peat and loam.

s Asplenium flabellifolium, (fan-leaved Spleenwort.)—Sandy peat and loam.

r Asplenium præmorsum, (bitten Spleenwort.)

s Brassia Lanceana, (Lance's Brassia.)—Turfy peat.

Begonia Martiana, (Martius' Begonia.)—Sandy loam.

r Blechnum gracile (slender Blechnum.) Sandy peat and loam.

r Blechnum polypodifolia, (polypody-leaved Blechnum.)

s Cœlogyne undulata, (waved-leaved Cœlogyne.)—Turfy peat.

s Cattleya Aclandiæ, (Lady Acland's Cattleya.)—Turfy peat.

s Cattleya Forbesii, (Forbes' Cattleya.)

s Cattleya Loddigesii, (Loddiges' Cattleya.)

Centradenia rosea, (rosy Centradenia.)—Sandy loam.

Chorozema rhombea, (rhomb-leaved Chorozema.)—Peat and loam.

Cistopteris atomaria, (dotted Bladder Fern.)—Peat and loam.

s Comparettia coccinea, (scarlet Comparettia.)—Turfy peat.

Cyclamen persicum, (Persian Sow-bread.)—Loam and peat.

Cypripedium insigne, (admirable Ladies' Slipper.)—Turfy peat and loam.

Cypripedium venustum, (handsome Ladies' Slipper.)

s Dendrobium fimbriatum, (fringed-lipped Dendrobium.)—Turfy peat.

s Dendrobium Pierardii, (Pierard's Dendrobium.)

s Dendrobium Jenkinsonii, (Jenkinson's Dendrobium.)

Dionæa Muscipula, (Venus's fly-trap.)—Saturated peat and sphagnum.

r Doodia aspera, (rough-stalked Doodia.) Sandy peat and loam.

r Echeveria secunda, (side-flowered Echeveria.)—Sandy loam.

s Echinocactus, (Hedgehog Cactus).—Any of the species; loam and potsherds.

r Gymnogramma chrysophylla, (golden-leaved Gymnogramma.)—Sandy loam and peat.

r Gymnogramma calomelanos, (beautiful back Gymnogramma.)

r Gymnogramma tartarea, (infernal Gymnogramma.)

r Hymenophyllum tunbridgense, (Tunbridge Filmy Fern.)—On damp sandstones.

r Hymenophyllum Wilsonii, (Wilson's Filmy Fern.)

Justicia Calytricha, (beautiful hairy Justicia.)—Loam and peat.

s Lælia albida, (whitish Lælia.)—Turfy peat.

s Lælia autumnalis, (autumnal Lælia.)

Lobelia Erinus, (ascending Lobelia.)—Sandy loam.

s Lobelia ramosa, (branching Lobelia.)—Light soil, or damp moss.

s Lycaste aromatica, (spice-scented Lycaste).—Turfy peat.

r Lycopodium denticulatum, (tooth leaved Club-moss.)—Turfy loam and peat

r Lycopodium stoloniferum, (stoloniferous Club-moss.)

r Lycopodium Selago, (Selago Club-moss.)

r Lycopodium circinale, (rolled Club-moss.)

s Mammillaria stellata, (starred-spined Mammillaria.)—Loam and potsherds.

s Mammillaria tenuis, (slender Mammillaria.)

s Mammillaria pulchra, (pretty Mammillaria.)

s Mammillaria, any other species.

Niphœa oblonga, (oblong-leaved Snow-wort.)—Peat and loam.

s Odontoglossum Rossii, (Ross's Odontoglossum).—Turfy peat.

Oldenlandia Deppiana, (Deppe's Oldenlandia.)—Loam and peat.

s Oncidium pumilum, (dwarf Oncidium.)—Turfy peat.

s Oncidium lunatum, (crescent-lipped Oncidium.)

s Oncidium ornithorhynchum, (bird's-beak Oncidium.)

s Oncidium iridifolium, (iris-leaved Oncidium.)

Polypodium effusum, (spreading Polypody.)—Sandy peat and loam.

Polypodium angustifolium, (narrow-leaved Polypody.)

r Polypodium lycopodioides, (Club-moss-like Polypody.)

Pteris chinensis, (Chinese Brake, or Bracken.)—Sandy peat and loam.

s Rhipsalis salicornoides, (salt-wort-like Rhipsalis).—Sandy loam.

Rosa indica minima, (Fairy Rose.)—Turfy loam and peat.

s Sophronitis cernua, (drooping Sopronitis.)—On a block of wood.

s Sophronitis grandiflora, (large-flowered Sophronitis.)

Stylidium adnatum, (adnate-stamened Stylidium.)—Peat and loam.

s Trichopilia tortilis, (twisted-petalled Trichopilia.)—Turfy peat.

Trichomanes speciosum, (handsome Bristle Fern.)—On damp sandstone.

These are a few of the numerous plants which might be grown in closely glazed cases. We have named a considerable number of Ferns, because such structures are peculiarly adapted to them, and there is no class of plants more truly beautiful. Orchidaceous plants succeed well also, with the majority of monocotyledonous plants; and therefore, in making a selection from these, it becomes principally necessary to ascertain the ultimate size attained by them, so as not to introduce plants of too large dimensions. It is also desirable to choose such plants as are not too strictly seasonal in their growth.

PLANTING TULIP BEDS.

We believe there are few men more capable of giving instruction on this subject than the Editor of the Gardeners' Gazette; and with such impression we take the accompanying extract on the reformation of Tulip beds from that paper.

"As the Tulip fancy never looked more promising than it does at this moment, we wish to impress upon the minds of cultivators the advantage of arranging them with duplicates on each side the middle row flower. It is impossible to conceive the effect of uniformity, unless the bed so arranged is seen growing; the collection, however common it may be, that is planted thus, looks worth a score of beds that are arranged in the ordinary way. Let us give examples of a few rows:—

Ceres Blanche	Ulysses	Siam	Rose Emily	Siam	Ulysses	Ceres Blanche
Salvator Rosa	Madame Vestris	Brown's Polyphemus	Magnificent	Brown's Polyphemus	Madame Vestris	Salvator Rosa
Solon	David	Rosa Blanca	Bizarre No. 51	Rosa Blanca	David	Solon
Dutch Ponceau	Julia	Rubens	Aglaia	Rubens	Julia	Dutch Ponceau
Julio Romano	Rose Catharine	Titian	Siam	Titian	Rose Catharine	Julio Romano
Selim	Reine de Sheba	Comte de Vergennes	Duke of York	Comte de Vergennes	Reine de Sheba	Selim
Ceres Belleforme	Strong's King	Holmes' King	Prince William IV.	Holmes' King	Strong's King	Ceres Belleforme
Wallace	Camuse	Polyphemus	Violet Alexander	Polyphemus	Camuse	Wallace
Gloria Mundi	Washington	Claudiana	Austria	Claudiana	Washington	Gloria Mundi
Camuse de Craix	Ulysses	Princess Charlotte Cenotaph	Rose Emily	Princess Charlotte Cenotaph	Ulysses	Camuse de Craix
Sylvia	Beteral's Brulante	Fabius	Magnificent	Fabius	Beteral's Brulante	Sylvia
Solon	David	Aglaia	Tall Charbonnier	Aglaia	David	Solon
Ceres Blanche	Hamlet	Ambassador	Claudiana	Ambassador	Hamlet	Ceres Blanche

In this way would we have the whole bed planted; whatever was on one side the middle row should be on the other also; for those who have planted so once, will never leave it off. He may be unable to carry it out all through, but we must do the best we can when we are unable to do as we like. Flowers as nearly alike in colour, height, and size, must be selected, but nothing is so good as duplicates; and the nearest that two different flowers can be found to approach, makes a poor apology for the same sort. We have seen many beds of noble flowers appear one mass of confusion for want of proper arrangement, for in that consists the true art of cultivating a proper bed; and we may say fearlessly, that there is not one grower in a score, who ought not to blush for the downright injury he does his collection for want of that arrangement which sets it off, or rather which would set it off, to the best advantage. We will mention no names, but some of the finest collections in the kingdom are grown under an arrangement, or rather a want of arrangement, so utterly unworthy of them, that we confess it does violence to our feelings to see them ; and could the owners once see the detriment such want of arrangement does a bed, we should never witness it as we do now among some of the best collectors. Young fanciers will do well to begin as they mean to go on. If they grow but twenty rows, let them be grown in a scientific manner. Let there be nothing on one side the middle row that they do not also have on the other. If they have odd flowers, grow them outside, where, be it remembered, Tulips always increase better and grow healthier, until they have two; for it is folly, and we fear we must say idleness personified, to grow a bed of Tulips any other way. Tulips are not fit to be grouped. The mechanical way in which they are planted, that is, equidistant and in seven rows, shows that their colours should be uniformly contrasted. The arrangement of heights, as well as colour, is suggested by the very plan of growing; yet we find men who possess wonderfully fine collections, merely jumble the sorts together, so that the bed exhibits white, yellow, and red patches, from the sorts being huddled close to each other; sometimes half a dozen Bizarres coming together, sometimes as many Roses or Byblomens, without the slightest reference to the general appearance of uniformity. Again, as a bit of *advice* on this head, we would say to young growers, (for it is no use talking to old ones,) rather grow twenty good ones of a sort in your bed, than introduce inferior ones. Clean flowers are always acceptable and effective. It is not the dearness that constitutes a flower; and another great point is to grow two in a hole of all fine but treacherous varieties, and of all really conspicuous kinds, that you may break off the worst of the two, and so double the chance of a fine bloom. Polyphemus should never be grown without two in a hole, for it gives a double chance to both as to height and colour. We may have to take off the shortest or the darkest, whichever serves our turn the better. Charbonnier is another that should be so grown in couples; it is a beautiful flower, but apt to come dark, and you may have both dark after all, but it does give you the chance of taking away the darker of the two. Some Tulips are very apt to come a little out of character, and frequently stunted as to height; others are apt to split into offsets instead of blooming, both of which evils are detrimental to the bed. Rosa Blanca, for instance, is one of the most beautiful Roses, when in character, that ever was seen; but if you depend on one bulb, you will, upon an average, after you have done all you can in choosing, find one in three fail you from not blooming. Other flowers could be mentioned that fail you as to character. Claudiana is grand, but treacherous. Catharine is bright, but will come dirty. Madame Vestris showy and beautiful, but sometimes too full of colour. The Duke of Clarence never comes two alike nor twice alike, and nothing that is grown is more coarse and ugly than it will come occasionally. Siam is a beauty, but not two come alike. There is nothing like having two things to give one in all these matters; and when you grow two in a hole of all the doubtful flowers, and the same sort on one side as on the other, you may, by withdrawing the least beautiful all over the bed, render it a perfect object, surpassing anything and everything that can be produced in a garden. Our old cultivators, who possess magnificent collections, set horrid examples to the young ones, when they, after thirty or forty years' experience, show them a bed not well arranged. The young ones set down this confusion as a difficulty, which the grower has been forty years trying to get over, and has not succeeded. Why, the young fancier, if he have any taste, looks upon the task as hopeless, and it inflicts a heavy blow and great discouragement to Tulip growers. But our young friends must take it for granted that the want of arrangement is the result of idleness and procrastination. A man should set about Tulip growing the right way, and shame the elders by his taste. They are, perhaps, too far gone in their habits of indolence to set about a re-arrangement in good earnest, or they assuredly would not let the younger ones surpass them in taste. Some old cultivators have but one ambition—the ambition to possess the best of everything, and there it ends. The purchasers of half a century have enriched their out beds, and perhaps added something to the covered one, but the experience of half a century has not improved the arrangement. Let us hope that those gentlemen to whom young fanciers look up for example, will not fail to do something this year towards arranging them properly; and it can only be done effectually by turning out all doubtful and bad flowers; by then removing all single flowers, of which they have no duplicate, unless they will do for the middle rows; then to recollect that there are particular flowers of which they cannot grow too many, while there are others they might turn out altogether. Let them look to the doubling of the sorts, which are uncertain in every way, and follow the arrangement we have pointed out; for it is high time, now that having procured all that is good, they set about placing them in the best positions. We have not yet done with this subject."

CAJANUS BICOLOR.

(De Candolle.)

THE PIGEON PEA.

The seeds of this plant are used extensively as food by man, being cultivated for that purpose both in the East and West Indies. In the East Indies it is called the "Pigeon Pea," because its seeds are the favourite food of wild pigeons. It is also called "Doll." In the opinion of some botanists, only one species exists, of which there are two varieties, the one with flowers entirely yellow, and two or three seeds in each pod, which is never spotted; the other with flowers streaked externally with crimson, and having four or five seeds in a pod, which is marbled with dark streaks. Others regard them as distinct species. The first is called the No-eye pea, in the West Indies, and the latter the Congo pea. Seeds of this latter were collected in the neighbourhood of the town of Jellalabad; and were presented to the Horticultural Society of London by Sir H. Fletcher: in that establishment it is found to be a half-hardy annual, or biennial, growing about eighteen inches high, if planted in any good garden soil, and flowering freely from June to August. It is an upright-growing plant, with trifoliate leaves, the leaflets of which are oval-lanceolate; the flowers are yellow, pea-shaped, with red streaks on the outside, and are produced in short, axillary racemes. The yellow-flowered species, or variety, as it is regarded by some, is called C. flavus, by De Candolle (Cytisus Cajan, of Linnæus). The other kind is the C. bicolor of De Candolle (Cytisus pseudo-Cajan of Jacquin). They are usually considered as stove-plants in this country, but (like many others) they have been found to grow out of doors, in the summer season, in the Horticultural Society's garden. It is interesting as affording food to man in countries where the luxuries of more temperate climates are hardly to be obtained. In our own country, however, it is not likely to rival the excellent varieties we possess of the cultivated pea.

The following remarks upon these species are extracted from Dr. Macfadyen's "Flora of Jamaica:"—"The general appearance of both is very much alike, and they can scarcely, previously to flowering, be distinguished from one another, except that the leaves of C. flavus are rather smaller and finer to the touch. Of these two species the No-eye pea is the most delicate, being in the green state very little inferior to the English pea; and when dried and the cuticle removed equal to the split peas we receive from Europe. The other species is coarser, and made use of principally by the negroes, and requires in the dried state a tedious boiling process before the seeds can be softened. From the two species being frequently through carelessness planted close to one another, we may occasionally meet with hybrid varieties. When once established, they stand for several years. The leaves are annually shed, and are reproduced with the flowers in the early months of summer; the crop is gathered during the months of autumn. No particular care or trouble is required in the cultivation of these shrubs, and they thrive in the poorest land. They are said, indeed, to improve the soil on which they grow, by the decay of the leaves, which are annually shed in great profusion. There are few tropical plants, indeed, so valuable. They are to be found round every cottage in the island, growing luxuriantly in the parched Savannah, and mountain declivity, as well as in the more fertile and seasonable districts."

The introduction of this plant into some of our Colonial possessions, where many of the European vegetables do not thrive, would possibly be worth attempting.

GENERAL HINTS FOR THE MANAGEMENT OF GEOMETRICAL FLOWER GARDENS.

THERE are two modes of doing this branch of gardening; the adoption of one or the other, or a mixture of both, must depend on the circumstances in which a gardener is placed. The one is, by preparing everything in pots, and making one flower succeed another several times in the year; the other is, to use permanent plants only, and once planted, leave them to their fate. The mixture of both is, perhaps, the most desirable. In selecting the objects for a flower garden of this nature, two or three points have to be especially attended to. First, we are to remember that dwarf-habited plants alone can be effective, and preserve the pattern, as it were, of the garden. The second is, that colour alone, so that there be abundance of flower, is all that we need seek for; so that the form of a flower is nothing in the scale, when we are weighing the merits of the particular subjects we require. A third consideration is, the seasons of bloom. Now, we are circumscribed very much in respect to the height of flowers, and therefore are obliged to dispense with many whose colour would otherwise be of the greatest service. Let us first look among the Annuals for a few of different colours that will answer our purpose.

BLUE AND WHITE, OR COLOURS IN WHICH BLUE PREDOMINATES.

Nemophila insignis, blue, with white centre.

Clintonia pulchella, blue, with yellow and black centre.

Lupinus nanus, a dwarf Lupine, all blue.

Lobelia gracilis, a dwarf plant, all pale blue.

Lobelia ramosa, a dwarf plant, all dark blue.

Nolana prostrata, a dwarf plant, lilac, shaded blue.

Nolana atriplicifolia, blue, and white centre.

There can therefore be no want of blues, and these are every one dwarf enough for any flower garden, however small the pattern. We must now look for yellows and orange colours, which are the best contrast to blues; and here we feel some disadvantage, because we lose some excellent flowers by the height of the plants. Of the dwarf ones we have—

Erysimum Perofskianum, dwarf, bright orange colour.

Portulaca Thellusonii, dwarf, deep orange scarlet colour.

Eschscholtzia crocea, dwarf, large flower of orange.

Eschscholtzia californica, dwarf, large flower of bright yellow, with orange centre.

French Marigold, dwarf, orange colour and yellow.

Here is not much choice, but we may derive assistance from plants of another description; and we fear we are still worse off for red Annuals, for we have hardly anything at all dwarf, and with abundant flowers.

Portulaca splendens, rosy crimson.

Ten-week Stocks, scarlet and crimson.

Dwarf Larkspurs, rose colour and crimson.

Phlox Drummondii, rich scarlet and crimson.

Silene pendula, rosy pink.

Zinnia coccinea, scarlet and crimson.

But none of these are exactly what we like for any long period. There are, however, whites and reddish purples to be found in the two varieties of Candytuft, and other subjects may be found to help us out. Now, every one of the foregoing may be sown in pots of the large sixty size, and as they come forward to blooming, let the balls be turned out, six inches apart, all over the beds they are intended for. Whatever is there already, if not quite out of flower, may nevertheless be always turned out to make way for what is in perfection. We must, however, consider of the flowers that we are to look to by way of help. We begin with the spring flowers.

Crocuses of white, blue, yellow, purple, and striped.

Early Tulips, white ground and yellow ground, red and purple marks.

Hyacinths, white, yellowish, light blue, dark blue, red and pale rose.

Cyclamen, *coum* and *vernum*, both red.

Snowdrops, single and double, early and white.

Anemones, white, red of different shades, and blue ditto.

Narcissus of the dwarf kinds, yellow and white.

These will be found valuable assistants in all the spring months, and see us safe through that season in which it would be difficult to find flowering subjects that would stand the weather. Another powerful set of auxiliaries will be found among the frame plants purposely prepared for potting out in May.

Pansies of all colours and varieties, as well as selfs.

Verbenas, scarlet, white, purple, lilac, and rose of different shades.

Petunias, white, lilac, purple, and rose of various shades.

Geraniums, scarlet, of the dwarf kinds only.

Wallflowers of the dwarf kind, yellow, orange, and dark.

Stocks of the two-year dwarf kind, such Queen, scarlet, and white.

These and some others, if kept in small pots until the time of planting out, will be found of the greatest imaginable service. With regard to the plan to be adopted, the beds should always have the same productions and the same colour uniform. Thus, suppose there are six beds of a form, three angularly might have white Crocuses, and three, alternate, might be yellow ground Tulips, all in patches six inches apart. If the beds are in eights, then there should be four of one and four of the other; but in no case ought it to be allowed that any want of this uniformity should be seen. Crocuses of blue might be alternated with those of yellow, in six of the outside beds; six other beds might be planted with the Hyacinths alternated in their own beds, red, blue, and white all over; the arrangment being thus—

Red, blue, white, red, blue, white, red.
Blue, white, red, blue, white, red, blue.
White, red, blue, white, red, blue, white.
Red, blue, white, red, blue, white, red.

This would afford a rich opportunity of completing the circle of beds, without any variation from one bed to the other. Other beds may be filled with the early yellow and white Narcissus. But whatever portion may be in or out of bloom, the circle of beds in which they are should be perfectly unique. Nothing is more easy than to do all this in pots; and thus as one flower declines, another may take its place. The beds of Hyacinths might be succeeded by Verbena Melindres, a brilliant dazzling scarlet, which may be planted out in the middle of May, in the same places; for as they will bloom until they are absolutely cut down by the frost, or taken up for the winter, they may go out into the open ground; and indeed might, if the Hyacinths are not done blooming, be planted in the spaces between them. Ten-week Stocks may be turned out between the Tulips or Snowdrops, or some of them at any rate. Pansies may be put out in flower from the pots before the end of May; autumn-sown pots of Nemophila might be turned out in flower, and so may the numerous dwarf varieties of Verbena. Petunias, being coarser flowers, may be put in the largest beds, but nevertheless need not be long before they bloom. The Annuals sown in pots will, in their turn, come forward to replace those which decline; and, with a little management, the entire garden can be kept the chief part of the year in full bloom. There are some particular points to which our attention must be given in the adaptation of the flowers. First, two colours at all approaching each other ought at no time to be together; on the contrary, the greatest contrast should be maintained; yellow against blue, or red and white against dark colours; and in general, dark colours ought to part light ones. Any that must be planted out before they flower, may be put between those already out, if they are sufficiently dwarf to let the new plant have sun and air. At the end of the summer we have the autumnal Crocus, the winter Aconite, the Amaryllis lutea, and the Christmas Rose. A very slight observation, as the summer goes through, will enable us to note those subjects we most prefer, and use or reject all kinds of plants, as we admire or dislike them. But if we grow large quantities of all kinds in pots, they are little, if any, more trouble; and no sooner need a series of beds look shabby, than we could replenish the space with something just coming to perfection. It is the same thing in managing borders, only that we are not confined so much to the height of the plants, and therefore command a greater diversity. But let us now consider what can be done where pot culture cannot be managed. It is clear we can have all the spring flowers to plant in their various beds. These should be planted, as we have before observed, six inches apart at all other times, but here it will be better to plant them in closer order in the rows, and let the rows be a foot apart. These rows should always be drawn to match the inner edge or margin of the bed; thus, if there be a concave circular edge, the rows should be drawn to be the same distance from the edge all through. If the bed were circular, the rows should be rings a foot from each other. If the bed be any other form, the row nearest the inner edge must be the same figure, merely three inches from the inner edge; and all the rows behind must be drawn the same figure, merely a foot behind one another. The object of making the plants or bulbs closer in the rows, and having a foot between the rows, is to facilitate the planting of succeeding subjects as soon as possible; and this offers no impediment to the planting of the second subject while the first is in the ground. Not only so, but it gives an opportunity of digging up the first subject as soon as it is necessary, without disturbing the successor. The principle may be carried even further than this, for two subjects may be planted in the same bed at the same time. Crocuses, Snowdrops, early Tulips, Hyacinths, and such subjects, may be planted in November, in one set of rows; while Wallflowers, Anemones, and the hardy Ranunculuses, may be planted in others; and when the spring once opens, this alternate system will enable us to keep up the succession to almost any extent and variety. But even here the sowing of Annuals must be separate in some cases; because many require planting out, others do not; and the proper way to set about doing all this upon system is, to make up your mind first, that you will have certain things succeed each other. Thus the Hyacinth succeeds the Crocus, the Verbena succeeds the Hyacinth, and this lasts the whole year; then the Anemone succeed the Narcissus, and the Narcissus taken up, makes room for the Early Ten-week Stock; the China Aster goes in when the Anemone comes out; the Wallflower succeeds the Snowdrop; the Turban Ranunculus succeeds the Wallflower, and the Wallflower, when potted up, makes way for the Phlox Drummondii, which lasts till all is over. Numerous Annuals offer a varied choice. Each of the plants we have mentioned affords an opportunity of showing one's taste; and the flower garden, with all the plants we have mentioned, will form no small delight to the admirers of the fancy mode of carpeting the ground with the blooms of living plants.

THE PINE APPLE, AND DISROOTING.

Much stress has been laid on the production of two or three heavy Pine Apples, which were, in fact, the fruit of several plants that had stood over without fruiting for some time, and were planted out in a dung bed, not in pots, and submitted to what the Pine Apple wants, plenty of heat, until they yielded the produce which made so much noise. These plants were not disrooted, it appears; and the fact was made use of to show up, as it were, the folly of disrooting; but without sufficient cause, when the object of disrooting is considered. A man who grows Pine Apples must first make up his mind what he is going to grow for—size, or rapidity of supply. The market-gardeners, who have been ridiculed for not producing Queen Pines of five pounds, and Providences of ten or fifteen, have several things to consider. First, they want Pine Apples of a marketable size; second, they want them of good flavour; third, they want them at the particular season when they pay best. These considerations induce them to strike their suckers as quick as they can, grow them as fast as they can, and when they have got them about the size they want, to throw them into fruit at the proper season. Now the disrooting is intended to hasten the fruiting, and nothing else. Root-pruning trees is no new mode of promoting their bearing at an early age. Mr. Rivers of Sawbridgeworth, has practised this so successfully with Pears, that some that would grow in a peck pot would produce a basket of fruit. The cultivators of Pines for market calculate their time so well, that the supply at market, or to their customers, rarely varies much, either in weight or period of ripening. Yet these persons are taunted with not knowing how to grow fruit, merely because a gentleman's gardener, who has no season in particular to produce fruit in, can grow them larger than the market-gardeners choose to do. Many of the gentry, who always grow for size, hardly know the flavour of a good Pine Apple; for, as has been well observed by some writer, large fruit are invariably less high-flavoured than small fruit of the same kind; and the good folks who supply the market not only hit the size that everybody wants to buy, but the flavour which everybody wishes to enjoy. The only question, then, for the consideration of the grower is, does he want size or rapid growth? Does he want Pines for the continued supply of a family, and all sizes, many months in the year, or require them all at once, when they bring most at market? If he requires to supply in small quantities and constantly, he must grow several kinds of fruit. He must have plants of all sizes; he may let them take their chance. Some will be rising to fruit at all seasons, which is just what he requires; and they will most likely be fine fruit, because they will not have been hurried in their growth. But it is wrong to conclude, because Pine growers do not bring large fruit, they cannot do so; when all their system is, and their object is, to produce plenty of it at a right season, and of the marketable size, which is always at such seasons in demand.

RIBES SANGUINEA FLORE-PLENO.

The Ribes sanguinea with some of its seedling varieties, is a pretty object among flowering shrubs; but a double variety, figured in Paxton's Magazine the last month, is very striking, if the representation be correct; the flower would individually remind one of the double scarlet thorn, but the bunches, or racemes, of bloom are very long and handsome. This is one of the most rapidly growing of the ordinary flowering shrubs; and seedling varieties differ in shade from a bright red to deep crimson, and from that, through all the grades of lighter colours, up to white; this latter being called Ribes alba, or, as if in the spirit of contradiction, Ribes sanguinea, var. alba. The present variety is exceedingly showy, and is represented as a brilliant scarlet crimson. The original plant of this was found among a hundred seedlings, in the garden of the Earl of Selkirk, Kirkcudbright, by Mr. David Dick, who supposes one of his predecessors had sown them. These he caused to be planted out, and when they flowered this was among them. The racemes of the flower are represented to be three to six inches long; but certain it is that the plant will supersede the single ones, if it be only half as good as it is said to be. It is longer in bloom, and three weeks later coming into flower, than the single ones, and is, on that account alone, more valuable, if it were no better in the flower. Where there are large shrubs or trees of the single kind, a graft might hasten the growth a good deal, although the cuttings strike freely, and grow rapidly. It has been flowered by the Caledonian Horticultural Society, where it is considered a great acquisition, and whence it was had by Mr. Paxton to figure. Some doubt may have been entertained at first as to the constancy of the variety; that is, however, set at rest, as it has flowered two years as a standard, and on the wall. The standard plant was only in bud when the single variety had almost faded.

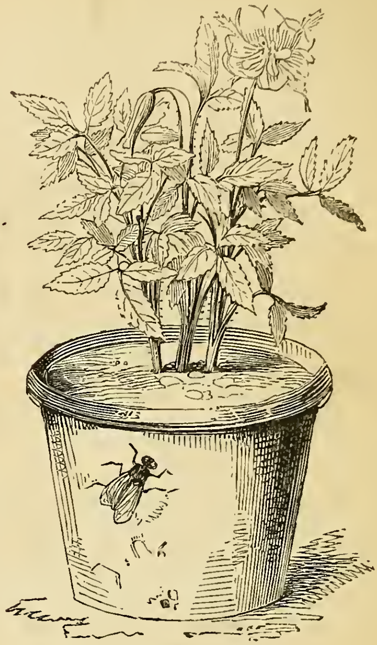
THE ADVANCE OF THE PETUNIA.

The advance of the Petunia is not unlikely to lead to false recommendations of many novelties not worth having, and therefore persons who buy ought to be careful that they obtain nothing that has not a good character well authenticated. The most decided break away from all the ordinary trammels, as it were, of the flower in the old school, was punctata, sold by Miller; but a man no sooner gets a name for one good flower, than he forces a dozen bad ones on the public. Now, nothing that Mr. Miller has let out since is anything like equal to punctata; and thus ignorant, and luckless, and thoughtless people are disposed to condemn even punctata, and call it an imposition. Nothing is more easy than to condemn a flower; but, unless facts bear us out, what simpletons, if not more than simpletons, we appear! Now, what were the qualities of punctata? What was there in it to justify its being pronounced an acquisition? First, then, its colour was, without any exception, the best approach to a rich blue; next, it was very singularly variegated, which rendered it a positive novelty, even had the flower been of a bad form; but, thirdly, it was above the average form, and, upon the whole, more attractive than any other out. Now, if this be not enough to justify the naming and letting out of a flower, we confess we know not what is. Some people made the discovery that the substance was not thick enough. Who said it was? Others said it did not always come striped. Whoever said it did? nor do Camellias. Where are the blotches of Gilesii, Chandlerii, and Eximia,—where the stripes of Donkelaarii? These will come selfs, and some of them more frequently selfs than variegated; but, with regard to Petunia punctata, those who find it will not come striped, merely proclaim the fact that they do not know how to grow it. Turn out Petunia punctata into rich ground, and the flowers will come the greater part of the season a self colour, in which case the blue is not so intense as it is when the flower is variegated; grow it on rock-work, or poor soil, or in a pot, and you have the stripes in perfection. The principal fault of this variety is the thinness of its flowers, which is also a fault with hundreds; and nothing but a decidedly new colour, or combination of colour, and a good form, can justify anything like a price for a thin flower; nevertheless, it is to be recollected that this strong characteristic of the flower is natural, and will be the most difficult to conquer. Mr. Girling's set of Petunias last year were praised by many, but condemned by some; perhaps those who condemn, will be good enough to examine the flowers previously out, and inform us whether Mr. Girling's have got the pointed petals of the old ones? if they have not, there is a great evil, prevailing almost universally over the old flowers, fairly got rid of in the new; then they may find something in the odd veining of the flower, and the different coloured throat. It is just possible that Mr. Girling's set of flowers would have been as good, perhaps better, if only eight or nine had been put forth, instead of a dozen. We should like the authenticated opinions upon new flowers better identified with the individual varieties than they are upon many occasions, because we fear that when a lot of flowers is sent for judgment, and the opinion of three or four is given, that opinion is too often made to answer for a lot, instead of the selection, so that the judgment passed on three or four, not mentioned by name, is made instrumental in getting rid of a score; for this reason we think it very desirable that names should be given, that the individual flowers may be identified with the characters and descriptions given. The Petunia always grows best in a pot, and in pots ought seedlings to be shown; but, in choosing the best, regard ought always to be had to the uses of the flower, and it must be admitted that they are mostly required for bedding out. This should direct us to pick out such as have shrubby habits, and abundant bloom; nor can we be too particular in choosing flowers sufficiently firm in substance to hold their forms. Very large flowers will not do this; they double over, or fall out of shape, look flabby, and droop in the sun, instead of standing boldly open, and in proper form. The colours must have a good deal to do with our choice for seeding from, but we may do right in saving many that we should do wrong in naming to send out. Any one thorough good quality might induce us to preserve a sort, for the purpose of assisting us in future seedlings; but a single good point would not justify us in sending out a flower; and we should recommend the raisers of seedlings to confine those they send out to such as shall be decided, by competent authority, to be worthy; and not, if they send twenty for judgment, and get favourable opinions of half a dozen, to send out a dozen; better charge the price of a dozen for the half dozen than annoy the buyer with the bad, when he would only have to throw them away. As, at this moment, the quality we have to wish for most is thickness or substance, this one property ought to save an ugly one; for, of all the faults in this, or any other flower, flimsiness is the worst, and with this flower it is the prevailing and most difficult fault to eradicate.

NEW ROSE.

GENERAL TOM THUMB.

This diminutive plant is one of the curiosities of Floriculture, for the accompanying sketch is the exact size of a plant sent us by Mr. Willison of Leeds, and the artist has been exact with the form of the flower, the foliage, and the plant. It will be observed that the flower is not of a first-rate form; it is rather semi-double, and the petals are pointed, but the habit of the plant is beautiful. The plant consists of the old bush of ripened wood, and two suckers of the present year; the bloom is on one of these suckers, and shows at once that even the most vigorous portion of the plant does not grow an inch-and-a-half before it blooms; nothing shows better the dwarf habit of the plant. The fairy roses, and the smallest we ever saw of any kind, was a monster compared with this Liliputian. It has every appearance of a healthy, free-growing plant, and certainly deserves a place with everybody who takes an interest in floral curiosities, for it is beautiful as well as curious. We have not heard whether the Rose has been sold out yet. We again remind our readers, that the sketch is the exact size of the plant and pot, which stand together about three inches and a quarter. Mr. Willison has raised some curious Roses of the crested moss kinds, one or two of which may be given hereafter.



THE ROYAL BOTANIC SOCIETY.

Third Exhibition for 1845.

This, the last Exhibition for the present season of the Royal Botanic Society, took place on the 2d of July, and was remarkable for the excellence of the plants, flowers, and fruit brought for competition, as well as for the unfavourableness of the weather.

With the grand and leading features of the Exhibition we are not about to deal, though these were all that could be desired, and would furnish subject matter for a much longer notice than our space will admit. We may just allude to the richly-coloured Clerodendrons, which, with their panicles of scarlet blossoms, and ample foliage, imparted quite a gorgeous character to the present show, which the former ones lacked. The Ixoras, too, with bunches of orange red flowers; the Aphelexes, with pink everlastings; and the Stephanotis, with bunches of pure white fragrant flowers, and broad shining leaves to its climbing stems, were all striking objects.

The principal new or rare plants were :—

TETRATHECA HIRSUTA.—A very nice plant of this was produced, which has been already noticed and figured at p. 74.

HOYA TRINERVIS.—The Hoya carnosa is well-known, with its bunches of starry white flowers, with drops of honey. This has oval fleshy leaves similar to that species, and bunches of creamy-coloured flowers. It is pretty. Messrs. Veitch, of Exeter, produced it.

PTERODISCUS SPECIOSUS.—Messrs. Veitch, of Exeter, had a plant of this dwarf herbaceous stove plant, with trumpet-shaped Petunia-like purple-rose flowers. It does not appear to be a free flowerer.

CHÆNOSTOMA POLYANTHA.—A pretty little dwarf plant, having pretty pale lilac flowers, with small yellow eyes. It is well adapted for bedding out, and is neat and pretty.

GESNERA SP.—Mr. Hunt, of Bromley, had a species from Mexico, of tall erect habit, with yellow woolly flowers.

NEPENTHES AMPULLACEA.—Mr. Mylam, of Wandsworth, had a magnificent specimen of this, seven or eight feet high, with several of its large pouches, mottled with brownish purple, and fringed down the front. The pouches of these pitcher-plants hang from the points of the leaves; in fact, they are considered to be a continuation of the petiole, or stalk of the leaf.

PELARGONIUM ANAIS.—This is a really beautiful "fancy" variety of Pelargonium. It is of dwarf, compact habit, and a most abundant bloomer, the flowers quite enveloping the plant; the ground colour is white, the five petals of each flower having a large bright rose purple spot on each, and the spots being of nearly equal size ; the two upper ones only slightly larger than the others; the flowers have a good deal the appearance of some of the light coloured Sweet Williams, from their evenness of marking. It was much admired by her Majesty the Queen, and must be a great favourite with ladies. Messrs. Henderson produced it.

HEATHS.—Mr. Pamplin, of Hornsey, had several varieties of Erica ventricosa, named splendens, magnifica, grandiflora, delicata, elegans, conspicua, multiflora, and bicolor ; all having pink, or blush flowers : the three first received prizes.

PELARGONIUMS.—A great many seedlings were exhibited. The only ones likely to be useful were the following:—Paragon, from Mr. Forster, purple rose, with dark clouding on the top petals, and narrow rosy crimson margin ; it is an even flower, of good form, and intense colour ; and received a first prize. Satellite, a crimson, with pure white centre, and dark clouding on the upper petals; Painted Lady, rose, with clear white centre, and dark irregular clouding ; and Aspasia, in the same way, were from the same person, and all received rewards. Gertrude, from Mr. Catleugh, a blush, with lighter centre, and dark irregular clouding ; and Salome, rose purple, with dark clouding, both received rewards. Mr. Beck's Prairie Bird, a white flower, with deep-coloured blotch on the upper petals, was rewarded ; and Mr. Beck's Pompey, rose pink, with dark cloud ; and Mark Anthony, rather small, but very even, rose pink, with dark blotch, and pink margin, were also good. These are all seedlings of the present year, and therefore require testing ; Paragon will probably be the greatest acquisition.

CALCEOLARIAS.—A very pretty strain of seedling Calceolarias is now coming into notice, with cream-coloured ground, and small irregular, numerous spots of a rosy purplish cast. Mr. Standish's Matchless, and Orinda, in this way, are good; and with Mr. Standish's Trumpeter, yellow, with dark coarse blotches, and Mr. Gaines' Alpha, bright yellow, with light crimson markings, were some of the best; and all obtained marks of distinction. A great many others were shown.

FUCHSIAS.—There were no seedlings of any great novelty, unless it were a small almost white one, with crimson petals, called Candidissima, from Mr. Hally.

ROSES.—Mr. Milne's Beauty of Munden, a crimson Bourbon, in the way of latifolia, is very handsome, but said to be scarcely enough distinct from that variety. Mr. Ottey's Queen of Virgins, a pale-coloured Bourbon, is above the average of Roses.

VERBENAS.—Mr. Smith had a good blush one, named Duchess of Sutherland. Mr. Pearson had an excellent dwarf white, named Avalanche, the same as exhibited at Chiswick under the name (by mistake) of the Hampstead lily.

PETUNIAS.—There was an excellent formed vivid purple rose-coloured variety, from Mr. Pearson, called Perfection. Mr. Plant had Beauty, a deep rosy lilac, veined. Mr. Ivery's Meteor, a veined rosy lilac, was small, but pretty.

CACTUS.—A crimson seedling Epiphyllum, shown by Mr. Green, was named Greenii.

PINKS.—Turner's Masterpiece, broad light purple lace ; and Ward's Great Britain, light crimson lace, both good flowers, received extra prizes.

[The foregoing article is by one of our most valuable contributors, and one to whom we are often indebted for similar articles. The opinions are therefore to be received as those of an excellent botanist; but, as we never trust a second person to guide our editorial remarks, we are obliged to make a distinction whenever the opinion is that of another. We have no reason even to express a doubt, but as thousands act upon our opinion, we are obliged to guard them from any misconception when we see the same flowers.]

ON THE EXHIBITION OF ROSES.

The exhibition of Roses, as single flowers, has commenced with every prospect of advantageous results. The quality of the flower, when unaided by the ornament of leaves and buds, stands out conspicuously, and the difficulty of finding twelve or twenty-four that can be tolerated, is much greater than most persons imagine. The first time we recollect to have seen Roses exhibited like dahlias, was at a meeting of the old Metropolitan Society, and it was the same year that the striped rose, called the Village Maid, was imported by Calvert. It struck us then that if that were made the fashionable mode of exhibiting them, it would lead to great improvements. At a Floral Meeting in Buckinghamshire, not long since, the Roses were so exhibited, and presented a very pretty object among the numerous and varied productions. But there was at that meeting a gentleman who declared that he had purchased more than five hundred kinds, first and last, and that he could not among the whole number find twenty-four fit to be shown for the individual properties of the single flower. Such, indeed, was the character of a great number, that he should have all but about forty changed by budding the better ones on these, as he would multiply the number of each of the best rather than keep things that he considered discreditable to the gardens. We are glad the plan of showing single blooms has been resumed in the country, and we strongly recommend all societies to follow the example, as a piece of the greatest service that can be rendered the floral world at the present moment. The Rose growers have had a pretty good fling. They have been allowed to go on selling hundreds of varieties that were unfit to grow, and have actually been retrograding in the quality of the varieties they sent out, until the purchasers have reason to complain of gross imposition. It is true, that the mode of exhibiting them in bunches has greatly encouraged the spurious and worthless varieties. A bundle of flowers shown together may look gay according to their colours, but they are so squeezed together, that if they were of good form, the form would be spoiled, and the bad form makes as good a bunch to look at as the better ones; but let any one look round the scores of bunches that may be seen at the great exhibitions, and see how few there are that have a round form, a plump face, a thick petal, or any other of the good properties which we are taught belongs to a Rose. The effect, however, of showing single blooms will be magic, and a good florist will be disgusted with three-fourths of the Roses now in cultivation, and those who order them for the future should distinctly require a guarantee that they will bear showing as single blooms. No others, in fact, should be grown but such as have some very distinct good property. A flimsy petalled Rose is not worth the room it occupies. It is fit only to make a garden in a litter, and keep the borders and beds untidy. In some of the catalogues we have observed an attempt to describe the Roses; and we are not a little astonished at the effrontery with which we are told that such and such a Rose is a show flower. A friend of ours had last year ordered a collection by marking a catalogue, and he put his mark to every variety so designated. It happened that, after he had given his order, we saw his list, and while we admired his spirit, we deplored his folly. The Roses came, and of course three-fourths of them, although described as show varieties, were downright worthless; and without attributing any improper motive to the dealers in Roses, we must protest against any such indefinite description as "Show Roses" until they learn what a show rose really is. If one-half, and more than one-half, of the Roses so called were discarded altogether, the list of show varieties would be improved; but even then there would be many that deserve no such character. Let every exhibition have a class of single blooms, not single stems merely, but actually single flowers, and we should soon see the kinds that ought to be appreciated, and those which ought not to be grown. Some very indifferent flowers might be cultivated for their colour, and some for the habit of the plant in the season of blooming; but nine-tenths of all that ever were named or sold could be well spared, and Rose growing would become a pleasing occupation. We, therefore, strongly recommend everybody to promote the showing of Roses like dahlias, and abstain from buying any or growing any but such as will stand that test of their merits. There will soon be such an alteration in the collections of Roses as will raise the flower in the estimation of the public, and place the queen of flowers on a respectable footing.

CHANGE OF HERBAGE.

Many curious speculations have been hazarded upon the subject of spontaneous generation, and the various facts which have been brought forward on behalf of the dogma, that such a thing is certain, are not a little curious. For instance, it is said, that if you burn wood on any spot, though there may be no white clover within an immense distance, the place will, in a summer or two, be covered with it. It has been said that, after burning any of the woods of America, vegetation of a totally different nature springs up. It is said that, after the Fire of London, the ruins were overgrown with wild mustard, or some such weed; and that, after the fire of the two Houses of Parliament, the same weed grew in abundance. We have endeavoured to convince ourselves that, in all such cases, the seeds are already deposited in the earth, and are germinated by the change of circumstances in the soil, or that the seeds were conveyed in numbers by the wind to those parts, and the change has rendered the soil capable of germinating it, while, under previous circumstances, it was not. The following curious paper, by the Rev. J. D. Banister, upon the subject of entirely changing the vegetation on a large surface of ground, is instructive as well as interesting; we take it from the "Zoologist,"* a monthly work of great use, and corresponding popularity:—

"For several years past, it has been remarked by persons visiting and working on Pilling Moss, that the herbage of a certain portion of it, much frequented by sea gulls in the breeding-season, had recently undergone, and more of it was yearly undergoing, a great and wonderful change.

"For the information of persons unacquainted with this locality, let me inform them that the extensive tract of boggy land, commonly called *Pilling Moss*, is situated in the northern division of the county palatine of Lancaster, and principally lying in the parish of Cockerham, the townships of Winmarleigh, Out Rawcliffe, Stalmine and Pilling; but as Pilling occupies a central position, and has a greater extent of bog-land appertaining to it, than any one of the other afore-mentioned townships, this boggy tract has on that account, I presume, obtained the name of *Pilling Moss*, which for centuries has afforded a considerable supply of fuel to the inhabitants of the surrounding country, and has also been considered so inexhaustible as to become proverbial in many parts of the north of England, namely, that 'Pilling Moss and God's grace will last for ever.'

"But it is the very remarkable change of the herbage of this celebrated moss that I have undertaken to notice in the first place. The chief part of this moss, in its original wild, uncultivated, and undrained state, produces very little herbage excepting bent grass, and a poor, short, unhealthy heath, provincially called *ling*. In its undrained state, the surface is of so soft and spongy a texture, that no description of cattle can depasture or even walk upon it in security; nay, unless a long frost has congealed the surface, or a succession of dry weather considerably evaporated the moisture, it is impassable, in many parts, dry-shod, by man. In every quarter boggy swamps, pits, or tarns of water, extensively prevail; and an unlucky or unguarded step may easily precipitate the careless intruder over head and ears in some of the deep sloughs, which are neither few nor far between. The average depth of this moss will probably be about eight or ten feet, immediately under which lies a stratum of blue sand, loam or silt, and this generally divides the boggy earth or peat from a rich and friable marl or clay, which, when applied as manure to the drained moss, renders it so fruitful as to produce, in favourable seasons, an excellent crop of oats.

"Originally on this moss the common wild duck, teal, snipe, curlew, golden plover, dunlin, and even red grouse, bred extensively, but of late their numbers have decreased considerably, especially since a large portion of it has been brought into a state of cultivation; though a few pairs of these birds still occupy certain districts where they annually rear their broods. New tenants, however, within the space of the last twelve years, have succeeded the ancient colonists, locating themselves in the wettest and least accessible portion of the moss. These modern settlers are the black-backed and black-headed gulls; and as the latter have been, for several years past, protected by the gamekeepers from the plundering propensities and pilfering habits of idle boys and mischievous persons, they have now become very numerous, and each succeeding year adds some thousands to their rapidly increasing numbers, so that the protection which is now thrown around this harmless bird, by the agriculturists and the gamekeepers, bids fair, at no distant period, to make this colony of black-headed gulls the largest in the kingdom. The place chosen by these birds for their nidification, is the most swampy that could be selected, and in its undrained state produces the least and poorest vegetation. Previously to its being selected by these birds for their breeding-ground, it produced scarcely anything but miserably stunted, unhealthy, heath. This poor heath, in the immediate vicinity of these birds, has been almost entirely annihilated by their excrement, and in its place has sprung up a rich and varied vegetation, surpassing in verdure and luxuriance much of the cultivated land around and adjoining the moss. The following are a few of the plants which have been introduced on this moss by this novel system of husbandry, and which I collected when visiting the place during the summer of 1843. 1. The meadow soft grass (*Holcus lanatus*). 2. The smooth-stalked meadow-grass (*Poa pratensis*). 3. The sweet-scented vernal grass (*Anthoxanthum odoratum*). 4. The broad smooth-leaved willow-herb (*Epilobium montanum*). 5. The buttercup (*Ranunculus* — ?). 6. The sorrel dock (*Rumex Acetosa*). 7. The ragged Robin (*Lychnis Flos-cuculi*). Besides these I may also particularize the common rush, which now prevails so extensively on the breeding-ground, as to assume the appearance of a young plantation; and having got its strong roots deeply and thickly interwoven in the spongy surface of the moss, has thereby rendered travelling much more secure. The rushes which have here, within a few years, sprung up so thickly, were last year sold, by the owner of the moss, for *five pounds;* and had not the difficulty, and consequent expense, of getting them from the moss been very considerable (the whole of them, when cut, having to be carried, in small bundles, such as a man could bear, on an average for half a mile), they would probably have been sold for four times the sum. To these I may add that nettles extensively abound, and also that the common fern is to be met with here, which latter plant is almost peculiar to a dry soil.

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* The Zoologist. London: Van Voorst, Paternoster Row.

"No one, who formerly knew this moss, and has witnessed the recent remarkable change, doubts for a moment that it has all been entirely effected by the dung of these birds, deposited on the moss during the breeding season. For as far as the nests of these birds have extended, and even somewhat farther, the change in the herbage may be distinctly traced; and as the gulls are yearly increasing, their breeding dominions must proportionably extend, until the cultivation of the moss abridges their territories, and eventually drives them to seek some other retreat. In the latter part of the month of May, or in the early part of the month of June, dependent in some degree on the season, this breeding colony of black-headed gulls is deserving of a visit, both from the ornithologist and agriculturist. The former will occupy a few hours agreeably in collecting eggs, materially differing in colour, although the produce of the same birds; at the same time he will have ocular proof of the varying plumage of the young birds, during their immature state. The latter may derive a salutary lesson, as he witnesses the wonderful change which the application of a suitable manure will produce on a soil even unprepared by any cultivation. If such an important alteration in the herbage can be effected by the excrement of this bird in an undrained morass, *one-third*, if not *one-half* of which, to the depth of eight or ten feet, if compressed by a machine of any considerable power, would be found to consist of water; surely he would be constrained at once to come to this conclusion, that the application of this valuable manure, in proper quantities, to a soil prepared by a judicious system of drainage and cultivation, would force the most luxuriant crops of every species of agricultural produce which the English farmer ever wishes to raise." —Pp. 881—883.

THE PINK, AND ITS PROGRESS.

We hardly remember a season in which we had more to gratify the lovers of this beautiful and, till recently, much-neglected flower than the present. The flowers which are produced from seed are very justly appreciated even by the raisers, before they are brought to the test, and we have a number to come out which are really and truly acquisitions, nor would it be safe to pronounce which would be the best of the few we are about to name. Looking around us at the shows, there will be found at least six that must be bought, because they are acquisitions of some consequence. The great evil that the Pink raiser has to contend with, is the rough or serrated edges, which seem to defy him; and patience and perseverance can alone get him through his difficulty. There have been rose-leaved Pinks, as they are called, but they only mean Pinks whose edges are not so deeply serrated as the generality have been, for the best we ever saw were not without the fault in a greater or lesser degree. All we can hope for at the present, is to get them less notched than we have been accustomed to. The Pinks which a grower must obtain new this year, are—

Hall's Queen of England,
Ward's Great Britain.
Bragg's George Glenny,
Turner's Masterpiece.

Those which he may obtain if he likes, and may find useful, are—

Neville's Thomas Lutman,
Mead's Susannah,
Henbury's Rubens,
Neville's Enchantress,

When there were four leading flowers to come out, each of which would be a star in a stand of twelve, and four others that would beat three-fourths of our present varieties, we do not know, but we doubt very much, if such a thing ever occurred before. There never was, in our recollection, any thing like it, and indeed there have been scores exhibited from which we might, in the absence of better, have selected several others to add to the list which people might buy with quite as much chance of success as usually attends the purchase of novelties; and while we recommend these varieties because we have seen them, we should be sorry to have it inferred that there are not others that might be advantageously added to the list of the best. For instance, we have heard, on pretty good authority, that there have been some good flowers shown at Oxford, and we should be unwilling to stand in the way of any one who raised a good flower by neglecting to notice it; but it is rather the interest of the raiser to see that every good flower is submitted to the proper test, and everybody has the means of doing it by the press, so easily, that it is a most unwise thing to let any good flower lose the advantage of a sound opinion. There were several very promising flowers exhibited at the Central Pink Show, but not placed for prizes, simply because they were lateral blooms and not half grown nor opened. They may be, for ought we know, very fine subjects, for they were the best rose-edged petals that we have seen a good while. To follow up these advantages, Pink growers should select half-a-dozen of the best of the old ones, and the four best of the new ones, and grow them for seed away from their general collection, because we ought not to stop where we are. The Pink is in its infancy; much as has been done with it, there is abundant room for improvement, and the best way to effect this is to keep very select kinds together, away from everything worse, and there will be great hope of the result. The exhibitions of the present year have been wonderfully improved, and the revival of the Metropolitan Society has infused a spirit that is sure to produce great advances. Of the four flowers we have mentioned as absolutely necessary to all the best Pink growers, each has been distinguished at one or more shows. Mr. Ward's Great Britain obtained prizes at the Royal Botanic Gardens, and at the Central Pink Show at Slough, and was shown, but got no prize, at the Surrey Gardens. Mr. Turner's Masterpiece obtained prizes at the Royal Botanic Gardens, the Central Pink Show at Slough, and the Metropolitan Society, the most severe test perhaps of all. Mr. Bragg's George Glenny obtained a prize at the Metropolitan Society, where it was greatly esteemed by many first-rate growers, independently of the two judges, who were not of the most indulgent kind. Mr. Hale's Queen of England got prizes at the Central Pink Show, and the Metropolitan; but the whole four would have got prizes anywhere, upon the simple principle of their being much better flowers than a great majority of those we are growing already, and also different. Mr. Henbury's Rubens was shown at the Royal Botanic Society's Exhibition, and had there been a third prize, must have had it, but the excellence of the other two placed it in a worse situation than it would have been alone. The principal fault is there being too much colour in it, and too little novelty, though it cannot fail to be useful. Mr. Neville's Thomas Lutman is a novelty, and was a favourite at the Blackheath Pink Show, where also Mr. Mead's Susannah was exhibited, and obtained a prize. Mr. Turner's Beauty was shown at the Royal Botanic Gardens, and the same remarks will apply to it as we have applied to Henbury's Rubens; the excellence of the best two threw it into the back ground, although a flower that may be found useful. The Pink Shows of next year will be on a far more extensive scale than anything that has been seen yet, and especially that of the Metropolitan Society, of which the prizes will be both numerous and good, after the fashion of the Dahlia Show of last year. We have, therefore, every right to say that the Pink is decidedly on the advance, and that the Pink growers are acting wisely by giving all subscribers to their societies a collection of Pinks to begin with. The Society at Blackheath are inviting members to join them, and giving them plants of the winning flowers; those, therefore, who wish to commence growing them have only to send their names to the secretary, at the Hand and Billet, and they will receive in the autumn a very nice choice collection. To these they may add the new ones, and be set up for showing well the first season.

FLOWERS OF THE MATIN AND EVEN SONG.*

Among the fruits of the early Horticultural Exhibitions, may be reckoned the increase or spread of the love of flowers. In 1832, people almost smiled at the idea of giving good prizes for the best collections of cut flowers, and when, in a year or two, a ten-guinea gold medal was given monthly for the best basket of cut flowers, to be afterwards presented to the Queen, half the Sir Fretfuls of the age protested against the monstrous folly. Yet what has been the effect? First, the example of giving prizes for cut flowers has been followed everywhere. Secondly, it has caused thousands to devote their attention to flowers who never devoted an hour to them before. Thirdly, it has created a love of flowers which has spread all over the community, and rivetted the attention of all classes. Flowers always supplied the poet with his happiest images: writers of all ages found in them a prolific source of food for the muses; but now, instead of these lovely forms being subsidiary to other objects, and becoming mere embellishments for the writers of poems, they form the foundation and the superstructure of whole volumes devoted wholly and solely to their praises, and we could find a library upon the subject of flowers alone. Some of these works are practical, some descriptive, some historical, but all interesting. The cultivation of flowers has called forth the efforts of many writers, who teach us what to grow and how to grow them. We have Gardening for Ladies, and Gardening for the Million, whole volumes devoted to the Rose, the Tulip, and the Dahlia. We have the Language of Flowers, and the Flowers of Poesy—in short, we have flowers of all hues, put to all uses, and if the world has run flower mad, let us be thankful that there is both method and merit in the madness. Among the books which owe their existence to flowers, may be mentioned a tasty little volume, with coloured illustrations, entitled, "Flowers of the Matin and Even Song," by Mary Roberts. The idea is pretty, the writing pretty, and the subject pretty; what more can we say? Let the authoress speak for herself:—

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* Flowers of the Matin and Even Song; or Thoughts for those who rise early. By Mary Roberts. London: Grant and Griffith.

"THE DAISY.

"Wee modest crimson-tipped flower, 'art thou too,' one of 'Flora's watches'* noting upon earth her progress in the heavens? The name of Robin is given to that fond bird, which, as legends tell, covered the innocent children with green leaves, when sleeping their last sleep in the lonely forest; and to thee, a name is given, which tells of the sports of childhood, and of the love which has been shed upon thee from one generation to another. The daisy, then, is called bairnwort, from the delight with which the young are seen to gather it; the eye-of-day, because, while other flowers are still sleeping, no sooner does the sun appear on the horizon, than the daisy is awake. Who is there that does not love the daisy, *la belle Marguérite* of the French, the meadow-pearl, so called from its pearly look among the grass; the bonnie gem of the Ayrshire ploughman, that 'wee modest crimson-tipped flower,' which is associated with all the sports of childhood, and all the delights of home? A thousand indefinable emotions are blended with this simple flower; it recalls to mind not only the race in the green meadow, or beside the wood walk; the stringing of its emerald-tinted stars, when the petals had fallen off, and the butter-cups and primroses, which often lured our steps into the damp grass, or beside the streamlet's brink; but the home, the home, in which our young days passed. It might have been a mansion or a cottage, but there our father watched over us, and there our mother smiled upon us; and over its blessed threshold, our brothers and our sisters went and came, and we too passed in and out, when roses blossomed beside the open door, or the snow lay cold and white upon the ground. The daisy is the flower which, of all others, calls up such wayward fancies: it is among flowers, what the cuckoo is among birds, and he who hears the one, or sees the other in a distant land, might break his heart in longing for all the hopes and joys, the comforts and the virtues which are comprised in that one word—home. The daisy, too, is the meekest looking of flowers; it grows in mead or glade, on commons, or broken ground rough with stones and pebbles, on which few other plants will vegetate. Where the wind has deposited a scanty supply of earth, blown up from the dusty road, or swept from out the quarry, there the daisy will take root, and clothe the arid soil with beauty. There, too, the little hawkweed, concerning which I shall speak elsewhere, will sit beside her; the one to tell when the sun is about to rise, the other to remind the weary labourer, that he may rest from his work at noon. The daisy has also another simple task assigned her, and this she faithfully performs. She not only watches for the sun, when the day begins to dawn, but she tells of coming showers. She folds up her snowy or pink-tinted leaves around the golden disk which they encircle, when journeying clouds obscure the rays of the warm sun. And thus it often happens, that acres of waving grass, which have looked as if covered with a white sheet, are, by the effect of a coming shower, suddenly restored to their pristine verdure."—Pp. 12—15.

This is but a portion of the matter devoted to the daisy, and it has besides the prose eulogium, a poem, in common with the rest of the flowers honoured with a notice. Our readers will observe that the subjects selected for notice are those flowers which undergo changes at different periods of the day. Having given a portion of the prose, we shall select one of the little poems, and for choice we take the Water Lily:—

"That peerless lily to the light
'Her chalice rears' of purest white;
And bees, and many coloured things,
With dappled coats and glittering wings,
Unceasing hum the leaves among,
As if to swell the matin song
That rises now from vale and glen,
From warbling birds and grateful men.
Each little insect's world of care,
Perchance of visions, fond as fair,
Of cherish'd homes and infant race,
And all that charms their natal place.

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* "Linnæus gave the name of Flora's watches to all such flowers as close and open at certain hours of the day."

But who, in truth, may guess or tell
What thoughts those tiny bosoms swell?
Oh! I could sit beside the brink
Of that bright lake, and soothly think
Of Him who made the mountain high,
Yet bends on earth a watchful eye;
Who bade the flower of peerless white
Uplift her petals to the light,
That stand like burnish'd pillars round
To guard from harm her fairy ground,
Where summer creatures love to dwell,
And sip from out the brimming well;*
The well, though full and brimming ever,
Yet leaping o'er its margin—never.
Fair flower! thou art not made in vain!
Nor yet to grace that watery plain;
Nor yet, that living things may dwell
Within thy bounds, beside thy well.
But aye, that erring man may look
And read, as from an open book,
Of Him who, when on earth he trod,
Drew oft from flowery brake, or sod,
Or warbling bird, in glade or glen,
Lessons of truth for anxious men."—Pp. 152-154.

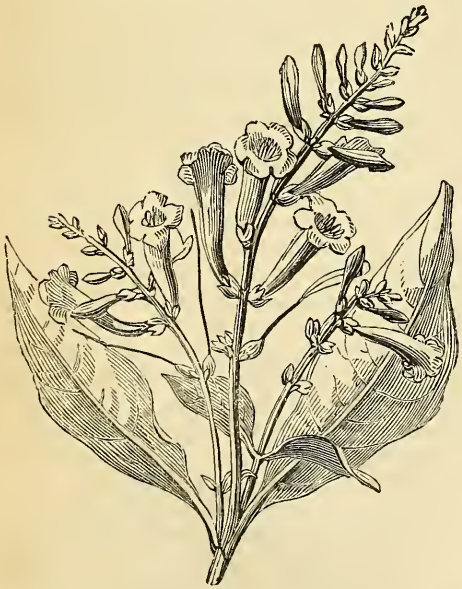
There is throughout the book a train of serious thought and holy purpose, highly creditable to the authoress; and having given fair specimens of the style, she requires no further recommendation. We may, perhaps, hint that the volume would be a pretty present to the younger branches of a family.

SALPIXANTHA COCCINEA.

(Hooker.)

THE SCARLET TRUMPET-FLOWER.

In Salpixantha we have a handsome stove shrub; and being considered by Sir W. Hooker as forming a genus distinct from any hitherto described, some knowledge of its character may be interesting to our readers.



It is described as a low branching shrub, glabrous or smooth in every part; the leaves are ovate, dark green at top, paler beneath, slightly waved on the margin; opposite, that is, attached to opposite sides of the stem, with which they are connected by short foot-stalks: the flowers are produced in a loose, gracefully disposed spike, which is either from the axils of the leaves, when it is produced singly, or from the termination of the shoots, in which latter case it is usually accompanied by two smaller spikes, one on each side: the flowers are arranged on this spike decussately opposite, that is, in pairs from opposite sides of the stem, alternately at right angles, forming four rows of flowers. Individually they are tube-shaped, scarlet crimson, with an expanding margin or limb, as it is termed; the interior is white; they have a good deal the appearance of the blooms of Russellia juncea, both as to size and shape.

It inhabits the island of Jamaica, from whence it was sent by Mr. Purdie to the Royal Garden of Kew. In that establishment it is found to bloom in the autumn and early part of the winter, and has a very handsome appearance when in bloom. It requires the assistance of a stove or hot-house. Sir W. Hooker observes that it "has at first sight little apparent affinity with the Acanthaceæ," in which natural order it is stationed.

THE ORCHARD AND FRUIT GARDEN.*

Few people have read more and practised more than the author of this volume, which, by way of introduction, we will observe, is very beautifully got up, with gilt-edged leaves and coloured plates; which said plates are said to be portraits of the particular fruits described, and of the blossoms of their peculiar trees. The plan of the work is to give brief histories of all the fruits, and descriptive lists of sorts most recommended. To this is added a very good practical lesson on the management of each, and in this the author shines. Very few men can come up to him, and none pass him, in the practical part of a gardener's business. It is only when he trusts to others that he errs; and this is the case occasionally with the lists of fruit, which he rather boasts of in the commencement of the work, where he says—

"The principal feature of the work, therefore, is the Select Lists of the various kinds of fruit, with the copious synonymes attached thereunto. The author believes that they contain all the sorts really worth cultivation. He has admitted none but varieties of the highest character, and such as will repay the cultivator for his trouble and expense. The selections have been made for the latitude of London· planters will therefore make the necessary allowance, if they live in a higher or lower latitude."—Pp. iii. iv.

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* "Nectary, or honey cup, in which many flowers secrete a sweet juice."

* The Orchard, &c., by Charles M'Intosh, Head Gardener to the Duke of Buccleuch. London: Wm. S. Orr and Co., Amen Corner, Paternoster Row.

Here we can tell Mr. M'Intosh he has not relied on his own practical knowledge; he has derived some of his information from sources not at all in accordance with the experience which dictates his own portion of the work. In the early part of the volume we are informed that—

"The earliest notice of British Pomology is that by Richard Arnold, a citizen of London, who published his 'Chronicles' in 1502, in which work he dedicates a chapter to '*The crafte of graffynge and plantynge and alterynge of fruits, as well in colour as in taste.*' The art of grafting, including the amelioration of fruits, is the subject principally treated of in this work—a proof that the science had attained some degree of advancement even at this early date.

"Arnold, as a Pomological author, was followed by Sir Hew Platt, Mascall, Gerard, Lawson, Parkinson, Tusser, Bacon, Hartlib, Coles, Austen, Beales, Evelyn, Drope, Laurence, Langford, Facio, London and Wise, Switzer, Bradley, Miller, Langley, Justice, Hitt, Abercrombie, Gibson, Boutcher, Preston, Speechly, Forsyth, Salisbury, Knight, G. Lindley, Lyon, Hayward, Harrison, Dr. Lindley, Rogers, and last, but certainly not least, Mr. Robert Thompson, of the Horticultural Society of London, who has done more, particularly in the arrangement of the nomenclature of fruits, than all the others together.

"It will naturally be supposed that among so many authors an immense mass of information must have accumulated on this subject. This is to a certain extent true: but prior to the publications of Speechly, Forsyth, and Salisbury, little can be gleaned which is found of practical utility to the Pomologist of the present time. Knight, Lyon, Hayward, and Lindley, have treated the subject physiologically; and to the former of these in particular, every horticulturist is deeply indebted."—Pp. 1, 2.

Now, we do not admit half so much as do authors who are going to quote their brethren. As in duty bound, when they mean to tax any one for a page or two, they must begin with a compliment; and it happens frequently that the passage quoted is worthless, if not mischievous; and the compliment paid, wrong, if not ridiculous. The synonymes of fruit, like those of flowers, create disappointment and confusion; and next to this, the starting out new fruits very like the old ones, makes bad worse. The author does not complain at the right place, nor of the right persons, or he would not subject himself to the dilemma which strict criticism would place him in. The professional gardener, and the cultivator for amusement, are alike ignorant of the value of a thing bought without a distinct character; and the sellers and raisers of fruit have been as bad as those of flowers, in turning out so many kinds so nearly like each other. Our author very properly says—

"The botanist has permanent and highly marked characters, by which he can describe and distinguish different species of plants from each other; but the shades of difference between fruits are in general so slight, and these so liable to be changed by soil, situation, climate, and cultivation, that it is often difficult to find sufficiently permanent characteristic marks by which one fruit may be distinguished from another. 'Some individuals,' as Mr. Loudon very justly observes, 'who have cultivated, fruited, or studied extensive collections of apples, pears, or plums, *may know at sight* a considerable number of varieties; but in general only a very few sorts are known by one individual; and in the great majority of cases, a gentleman's gardener can speak with confidence regarding those sorts only which are under his care. The reason of this is, that the shades which distinguish varieties are so fleeting as not to be retained in memory, or only retained to a very limited extent. An apple may be distinguished from twenty other apples all very much alike, when the whole twenty are placed together before the eye; but any one of the twenty, taken apart, and delineated and described, however perfectly, will hardly present any marks sufficiently distinctive to be remembered, and by which it may be recognised with any degree of certainty.'"—P. 2.

All fruit, as well as all flowers, ought to have distinctive characters. Gardeners have no business to be taxed to find the names of twenty things, all nearly alike; and if we have any fault to find with Mr. M'Intosh, it is that the fruit lists are too long for the thousands, though they may be right for the gardener in a large establishment. It is to us especially objectionable; but, as the descriptions are for the most part fair, we may be told that a person need buy no more than he wants. We, however, had much rather have seen about thirty-six sorts of apples, and they all of the best and most striking, than one hundred and thirty-six sorts, which Mr. M'Intosh has given us to choose from. But we grumble at having flowers under a dozen different names; what have the fruit-growers to do, then, with their hosts? Read the following facts as a sort of damper to young beginners. Mr. M'Intosh says—

"The inconveniences to which the cultivator is subject, owing to the present defective state of nomenclature, are innumerable. One of these may be instanced in the case of the Grosse Mignonne peach, one of our very best French sorts, and one which ought to find a place not only in every garden in Britain, but in every forcing-house where peaches are grown. Yet such is the confusion in regard to nomenclature in this case, that this excellent fruit is sold in the nurseries and cultivated in many gardens, under no less than *thirty-three* (!) different names; the Bellegarde under *eight* or *nine*, and the equally excellent Late Admirable under *nine* or *ten*, and so of some others. The consequence of this is, that after a gentleman has purchased perhaps fifty peach-trees under different names, with a view of obtaining a selection of the most valuable sorts, and after he has undergone all the expense of planting and cultivating, and the trees have come into a bearing state, he may find that, instead of a collection of fifty sorts, which ought to prolong the season of this fruit to its greatest extent, he is in possession of *three sorts only*, which, although excellent in themselves, afford him neither much variety, nor a sufficiently early and late supply for his table.

"On this subject Mr. Loudon offers the following judicious remarks:—'There are probably not half so many distinct sorts as there are names in use; and of that half, most likely two-thirds are not worth cultivating. Of most of the sorts originated from seed, sufficient time has not elapsed to judge of their merits; they are all described as good, but unquestionably many of them are worth little in comparison with the best old sorts. Some of the cherries and peaches might be adduced as examples: and the Poonah grape, lately imported from the East Indies, and stated to be "a valuable addition to our gardens," has been in the country (in the Brompton Nursery, for example,) an unknown length of time, under a different name, and scarcely worth cultivating.'"—Pp. 3, 4.

We have always been averse to long lists, because we require something striking to recommend every one that is selected; and even in these very pages we find the author, who gives us a hundred and thirty-six apples and seventy pears, actually protesting against large collections. He says—

"In forming collections of fruits, it will always be found more satisfactory not to attempt too great a number of sorts, and to endeavour to fix upon those that are already well known, and also such as are found to suit the latitude and circumstances of the situation. There has unfortunately been a kind of mania for collecting endless varieties of fruits; and in many cases some of our oldest and best sorts have been cast out of gardens, or cut down and grafted with others far inferior to them in every respect. Many French and American fruits have been also introduced, which, though perhaps excellent in their native climate, are quite unfit for many parts of Britain. These fruits, consequently, have not only fallen into considerable disrepute from incongeniality of climate, but the proprietor has sustained a serious loss. As to such fruits as strawberries, gooseberries, &c., which bear early, the disappointment is of little consequence, because a year or two at most will rectify the mistake; but in the case of apples, pears, cherries, plums, &c., which require a number of years to bring them into a bearing state, the disappointment becomes serious. Suppose, for example, that a Crassane pear is intended to be planted, but, from inaccurate nomenclature, a Crawford, or some equally worthless sort, should be purchased and planted instead—and few could detect it until the appearance of the fruit—there is not only a very serious loss of time before the error is detected, but a great additional delay in bringing the desired variety into a state of productiveness.

"In considering the propriety of making selections of the best kinds of fruits, we find Mr. Nicol, even in his day, complaining of the mania for collecting varieties. 'I have long made it my business,' he says, 'to persuade my employers, in the planting of new gardens and orchards, to limit the varieties of fruit, in the firm conviction that I was acting for their interest; for certainly the rage for multiplying them, and of having a numerous collection, has too much prevailed of late. It were better to be contented with a few good kinds, that produce well in most seasons, than to plant many sorts for the sake of variety, of which a crop is obtained, perhaps, once in three or seven years. It is no doubt of very great importance to select and adapt the kinds to the climate, soil, and aspect; and in some situations a greater variety may be planted with propriety than in others. This matter must be determined by existing circumstances, by the fancy of the proprietors, and by the discretion of the gardener."—Pp. 4, 5.

The subject of fruit, though it has occupied many pens, has been obscured by the theoretical whimsies of certain pruners, who made mountains of molehills, and insisted upon differing from others in things of no consequence, while they let matters of importance, that every body would have understood, untouched upon. Our notions upon the question of thinning the fruit on standard trees are well known to almost everybody. This work has always inculcated the necessity of thinning fruit. Let us hear what Mr. M'Intosh says on the subject:—

"Few gardeners, we believe, will dispute the necessity of thinning the fruit on their peach and apricot trees, which they admit improves those that are left to come to maturity; but few, we will venture to say, if ever they even thought of it, have carried the thinning of their apples and pears to any useful extent. This is a branch of culture too much neglected. We all know that a tree will ripen and mature ten dozen of fruit much better than it can twice or thrice that number, and with much less exertion on its own part; and also that the fruit will not only be larger, better flavoured, and in every way superior, but that the tree will be placed in a condition to produce a fair crop annually for many successive years: whereas, by the usual way of allowing the tree to produce as many as will remain on it till they become ripe, it is deprived of that share of nourishment which Nature has designed to go to the formation of fruit buds for the succeeding crop; and hence it is that we so frequently see a tree, or even a whole orchard, loaded with fruit one year, and the following bearing scarcely any at all. The proper season for thinning apples is just when the fruit is beginning to swell, and at this very period we see Nature doing what we ought to do for her, for at this time the trees generally, when overloaded, shed a great portion of their fruit, as if they were conscious of their inability to bring it all to perfection. In thinning apples, as well as other fruits, those should be removed that grow in shaded parts, or towards the middle of the tree, leaving the outside ones as enjoying the greatest portion of light and sun: not more than one fruit should be left on a spur, and indeed, if the fruit be from nine to twelve inches apart, the crop will be quite abundant enough. The choicer kinds of course demand attention in this respect; the more common, so long as they do not injure the trees, may be left to their fate."—Pp. 67, 68.

This is useful practical information, and there is no lack of it with regard to most fruits, although, to some of our readers, a good deal of it is familiar. Indeed, to do the author justice, he does not pretend to have written the book; for he says, at the very onset, sufficient to justify him in making it all up of extracts; and we must admit that it requires no small discretion to build up a book of the incongruous materials supplied by the writers of other days. He says, truly enough:—

"Upon no subject connected with Horticulture has more been written than upon the cultivation of fruit trees; a fact to which the shelves of the author's library, in common with those of most other gardeners, bear ample testimony.

"But, although cheerfully granting to his predecessors in this walk, their full meed of praise for the valuable materials laid open in their writings, from which the author has derived both pleasure and instruction, he cannot help lamenting that, with a very few exceptions, one of the most important subjects in Pomology has been hitherto much neglected; the nomenclature of the science has long been a disgrace to the Horticultural literature of our country.

"Feeling this deficiency, he has been induced to compile the following little volume, on which he has expended much time and research, with the hope, in some measure, of applying to it a remedy."—P. iii.

The greater portion of the work consists in accounts of good practice; and this, when sifted from a mass of stuff which shakes our faith in an author, is highly useful; and many of the old writers have contrived to give us a good deal of nonsense with what little is valuable. Upon the subject of heading down pear-trees we have the author's own notions, fortified by the evidence of former writers:—

"The pear-tree, under good management, and in a favourable soil, may be continued in health, vigour, and productiveness, for a greater length of time than any other fruit-bearing tree; and few pear-trees are either too old or too much neglected, providing the roots are healthy, but they may, by judicious management, be brought again into a state of health and productiveness. Forsyth was the first who carried this practice into general use; for, finding that the old pear-trees in the Royal Garden at Kensington had become diseased, cankered, and almost barren, and reflecting that, had he planted young ones, it must have been twelve or fourteen years before he could have had a supply of fruit from them, he determined to try the following experiment upon his old trees:—'I began,' says he, 'by cutting down four old and decayed pear-trees of different kinds, near to the place where they had been grafted: this operation was performed on the 15th of May, 1786. Finding that they put forth fine shoots, I headed down four more on the 20th of June in the same year (for by this time the former had shoots of a foot long), which did equally well, and bore some fruit in the following year. One of the first four, that is, one of those headed down on the 15th of May, produced nineteen fine large well-flavoured pears next year.' We are induced to make the above, and also the following quotation, in consequence of the late season of the year when the operation was performed, as well as to show the success of the principle of heading down, which, though at one period rather averse to it, we are convinced, by subsequent experience, to be of great utility.

"'On the 20th of June [Forsyth] headed several standards that were almost destroyed by the canker: some of them were so loaded with fruit the following year, that [he] was obliged to prop the branches, to prevent their being broken down by the weight of it. In the fourth year after these standards were headed down, one of them bore 2,840 pears.'

"Lindley recommends pear trees which have been long neglected to be headed down in the following manner:—'In February, or the beginning of March, with a thin fine-toothed saw cut every branch back to within nine inches of the main stem from which it issued, making the cut in a sloping direction, and as little exposed to view in front as possible, smoothing it afterwards with a sharp knife, and particularly the bark round the edge, so that its lacerated parts may be effectually removed; at the same time every spur, whether good or bad, upon the remaining part of the tree, should be cut off close and smooth, but not so close as to touch the ring of the bark at its base, from beneath which the young shoots will make their appearance.' The wounds are then to be covered with a little fine grafting clay, or with Forsyth's composition, to keep out wet, both of which to be applied in the state of paste, and to be laid on with a brush. When the young shoots appear, the best are to be selected, and fastened to the wall as they advance in growth. 'If the branches headed down in the spring,' Lindley continues, 'had been at regular and proper distances from each other, two shoots from each will be double the number subsequently required. It is, however, necessary this number should be trained the first year, as they will grow as strong and extend quite as far as if half the number only had been retained, and it will give an opportunity of selecting the best shoot of the two in winter pruning, and, in case of any accident happening to one, the other will supply its place; so that a full number of branches will thus be secured to furnish every part of the tree.' We beg to differ, however, so far from the great authority above quoted, in regard to the propriety of leaving so many branches, as that must always be governed by circumstances. In a tree of robust and luxuriant growth, no doubt, the more branches laid in the better, because it will check over-luxuriance in them; but in one of slender and weak growth the fewer left the stronger will they be. It would be hazardous to lay down a general rule in this case, as so much depends on the state of the tree."—Pp. 204—206.

With this example we shall close, not without giving our readers a hint that the operation of cutting down is only good when the head is out of order, and the stock healthy; therefore they are not to expect that every unhealthy tree can be saved by this operation, and it reminds us that, not many years since, in an old orchard where the pear-trees had attained an enormous height, we superintended the cutting down of many to one-third of their heads, and the effect was wonderful. All the lower branches which had not ripened a pear for years as it should have been ripened, yielded the finest fruit imaginable, and besides being much easier to gather, there was an aggregate of far more and far better fruit; so that, although we have no doubt of the efficacy of the practice recommended by our author, we should recommend far less mutilation when the lower branches are healthy. Upon the whole, the Orchard is a very useful volume—useful, because it is plain and positive. There is no telling us that Mr. A. says this, and Mr. B. says that which contradicts it, and then leaving us to find out which is right. The author tells us plainly what to do, and quotes other writers to confirm, not to contradict him, so that he leaves nothing in uncertainty or doubt. This is as it should be, and the volume is quite worthy of its author, who, albeit, is well known to the gardening world as a sound practical man.

SEEDLING ROSES.

We have rarely had to notice the production of seedling Roses in this country. It is true that we have seen catalogues put out, year after year, with many new names attached, and some very nicely described; but we observe by the newspapers, that at a recent show held at the Somerset Coffee-house in the Strand, which is now something like the Floricultural head-quarters of growers, there were no less than seven new Roses approved by the judges, who are supposed to be somewhat severe in their notions. We have made our inquiries into the characters of these flowers, which are said to be well worthy of being added to any collection, and far before many of the better ones now in cultivation. It seems they have one rare quality in Roses—they have, for the most part, very thick petals, and some of them have other good qualities. One, and we are sorry we find no name given, is as double as a Ranunculus, and nearly as perfect,—so perfect, as to altogether supersede the present varieties in the same way. But the more remarkable thing about this is, that there were thirty or forty Roses shown, and seven selected. At the Royal Botanic Society, there were three seedlings exhibited, and pronounced, on competent authority, to be good for nothing. We do not know whether they received prizes or not. We mention these facts to show that the Royal Metropolitan Society is drawing out a flower which has been hitherto trusted to the French, or to dealers; and it is no bad compliment to our articles on the subject of Roses, that the properties which have been published in this work have been the avowed guides of the judges who had to decide upon the merits of the strangers. No other Society can boast of having stirred up the Rose growers to show seedlings in such plenty; but we will engage to say, that if there be any official announcement of the flowers approved of by that Society, there will be a greater sale of those seven Roses than any Rose grower could command by the most elaborate description. It is singular, too, that they belong to a person who has not dealt in Roses to any extent, unknown, and unnoticed. We take from other sources the numbers of the flowers and the name of the man, that those who seek to possess themselves of them, may know how to procure the set, for we presume that will be the proper way to send them out. The raiser is Mr. Burgess of Alresford, near Colchester, and the numbers are 50, 7, 37, 51, 54, 11, 12; they are each double and good. We trust the public will have the names, and that they may not be borrowed ones.

THE SALVIA AS A BORDER FLOWER.

This is a most extensive and showy genus, and if there be anything in popular descriptions of colour, the three primitive colours are among them. For instance, Salvia coccinea is a splendid scarlet; Salvia patens is a magnificent blue; and we have a choice of several for yellows. Among those recorded are argentea, (or patula, pyramidalis,) aurita, ceratophylla, ceratophylloides, glutinosa, and nubicola. How far these will fill up the yellow we hardly know, but if they be yellow, then no family can produce the three primitive colours so beautifully. Of this genus there are no less than from a hundred to a hundred and ten species mentioned by Paxton. They comprise hardy, frame, green-house, and stove species; and are variously introduced from Austria, Mexico, the Cape of Good Hope, Columbia, Crete, North America, Spain, Barbary, Russia, Turkey, South America, Greece, the Canaries, Armenia, Caucasus, Persia, Egypt, Syria, Peru, and many other places. Many species have had their names changed, and the list of synonymes in the Botanical Dictionary, comprises no less than twenty-five whose names have been changed, and others substituted. The only ones we are to cultivate in the gardens are the best of the half-hardy ones; and the common Sage is one to begin with, for its use as a culinary herb. Many of the species are not worth notice, but the Salvia patens and the old Salvia coccinea are the most brilliant of our border flowers; we cannot at any rate spare these. They are raised from seed, or by cuttings, or parting the roots. They require protection against hard winter frosts. They are called green-house and frame plants, but they have been grown some years out in gardens well drained and covered from the winter cold, and form pretty objects all through their blooming time. The best mode of treating these useful and beautiful plants, is to pot them up out of the ground as soon as they are out of bloom; and if they are carefully taken up they suffer nothing; but they should be cut down to the ground and kept dry all the winter, in frames, like Verbenas. Early in the spring they may be struck freely from the young shoots, and multiplied to any extent. They are tall enough for the middle rows of border flowers; require tying to stakes as they grow, and when they have attained the height of two feet or more, they begin to flower, and continue until the cold weather checks them. They are not adapted much for pot plants, though in conservatories we are glad of anything to help make a show in the autumn; instead, therefore, of turning all out, pot some into pots, size twenty-four; give them plenty of air and water; let the soil be loam and peat, and rotten dung; and when they begin to rise for flower, place a neat stick in the pot to support them. The blue and scarlet are of great service among many dingy autumn flowers.

THE SOUTH LONDON FLORISTS' SOCIETY.

This Society has been the subject of some very angry discussions, in consequence of internal arrangements, with which we never trouble ourselves, and, from the first, these shows being both scanty and poor in quality, we think it suffered considerably. The last, however, fully evinced that a change had come over it in some shape or other, for the exhibition of Carnations and Piccotees was the best ever seen in the Surrey Zoological Gardens, if not the best in the metropolis. Bad as the season has been, there were more flowers than are seen together often, and the winners were especially fortunate in deserving all they obtained. The first stand in Piccotees, to which the silver cup was awarded, was perhaps the best that has been seen for years, and, generally speaking, the first, second, and third stands were beautiful. While looking around them, and examining the flowers individually, we saw that Calcot's Brutus was the finest Carnation in the tent, and Mrs. Barnard was by far the best Piccotee. There were no seedling Piccotees of any useful or promising kind, and with regard to Carnations, there was a very pretty bizarre, whose chief fault was a deficiency of the dark colour in many of the petals—it was otherwise well formed. Of plants in the general collections, there were many very fine, but the best were the Heaths, which were exhibited in high condition. Fuchsias were abundant, but coarse and ugly in character, though well grown. Of the seedlings there were none worthy of a prize, though one was so honoured. Roses were in profusion, and equal to anything we have seen this year as to quality. Some of the *best* growers *did* their best; and there was one tent filled with cut-flowers, where the judges made a sad mistake in putting second a collection without any rare, or choice, or tender flowers, and placing one third which contained, comparatively speaking, nothing but things choice and tender, even to the flowers of orchidaceous plants. We notice these things only because attention should be drawn to that most essential of all departments in the management of a Society—the judgment exercised in the award of prizes. Petunias were shown in considerable variety, but there was nothing very striking. Punctata was an advance as regards colour and striping, but followed with several very pretty novelties in the veined style. The principal that were shown at the Surrey were of this description, with only one fault, too little difference between them and those we have already; still there is an indication of thicker petals. Geraniums were shown well, and many of the favourites already noticed sustained their characters. There was some fine fruit; and here we are obliged to find fault with the placing of the third and fourth collections. The judges are not what they ought to be—they are not well acquainted with their duties, or they favour some one. Models of Gardens were pretty, and the show, upon the whole, was the best the Society have had for years. The Gardens are in fine order, and the proprietors have an excellent gardener, whoever he is. When we consider the tens of thousands of persons who assemble there, we are astonished that anything can be kept in such condition.

THE HORTICULTURAL SHOWS, CHISWICK.

Among the many novelties exhibited at the Chiswick shows, not yet mentioned, we have to notice a few that may be heard of hereafter, when new plants are announced for sale. For the most part, the new flowers exhibited at Chiswick, had been exhibited previously at the Royal Botanic Gardens. In Pansies there has been nothing very remarkable; in Calceolarias the judges, who, by the bye, both here and at the Royal Botanic Society, have been exceedingly good-natured, awarded two prizes, one for Leopardo, a flower with cream-coloured ground, with purple spots or dashes; another, named Alpha, of the ordinary colours, yellow and brown. The Pelargoniums, independently of those already mentioned, are few; Paragon, a very good striking flower, and good average form, may be mentioned as one, and perhaps the only one noticed by the Society. Veitch's Fuchsia serratifolia, already noticed, was exhibited at the Chiswick Gardens, and was highly appreciated; so far as we are concerned, we look upon it as a plant of extraordinary novelty; the habit is almost new, and the flower very different from any other in cultivation. Mr. Beck's seedling Geraniums are altogether new, and there are so many, that they almost defy description. We hardly know which to say is best; and, after the farce of charging five guineas and three guineas for new varieties, which were only new, and without much recommendation, it is beginning a new system to send out far better things for a guinea each. There are a dozen which go far before anything we have in cultivation. The characteristic of the whole is variety, and, individually, they have very strongly developed thickness of petal, smoothness of edge, brilliancy of colour, and striking approach to the desired form. Those who pretend to grow Geraniums should have the set, for they are of themselves a brilliant collection: Rosy Circle, Arabella, Sunset, Mustee, Marc Anthony, Desdemona, Othello, Isabella, Juno, Bellona, Margaret, Favorita, Zenobia, are to come out in October, the whole thirteen for ten guineas; Aurora and Calypso, quite equal to any of them, will not come out the present season. We have so often been asked to mention a few of the best Geraniums, that it is quite a relief to find that, for the usual price of two new flowers, the whole may be had; and, though we do not pretend they are all equally good, we can safely say that those which were not the most distinguished, were very much better than anything we have seen for many seasons; our readers, therefore, may take our recommendation of these as pretty nearly the best in cultivation; and may we hope that, instead of cutting back, and playing tricks, to form them into large bushy specimens, they will grow them well, give plenty of air, little or no heat, and be content with the two or three trusses of bloom, which will come grand, and show the character of the flowers, instead of a parcel of starveling blooms, which it has been the fashion to show, and thus detract from the merit of the plants. We hope and trust the Metropolitan Society, which we look up to as the ruling power in the decision upon Florist's flowers, will next June give their ten prizes for Geraniums, which shall be judged by the best trusses and character, instead of the largest number of trusses; for, grand as all these have been shown by Mr. Beck on large specimens, they will be much finer when shown with only one, two, or three good trusses. Heaths have been exhibited with effect all the season; but Pamplin's new ones have been shown, and approved everywhere. His whole set amounts to eight, but there are three or four that we suspect will come out soon. They are all of the Ventricosa kind, but beautiful in habit, abundant in bloom, and different both in shape and colour from those we have already. Where they are all acquisitions, it is hardly worth making a distinction; all he has to do is to imitate Mr. Beck, send them out at a moderate price, and all Heath growers will want his set. At the Chiswick shows, magnifica, splendens, and grandiflora, were the best; but the others were beautiful in their way, and deserve places in all good collections. Mr. Veitch's new Siphocampylus, called S. coccineus, was exhibited at Chiswick, though previously shown at the Royal Botanic Society. It is very much finer, and of more beautiful habit than any of the others, and a great acquisition. The scarlet flowers are brilliant and numerous, the plant bushy and handsome. A new purple annual was also shown from the same nursery, called Calandrinia umbellata; and a new plant, called Salpichroa glandulosa, with dull yellow flowers. Mr. Glendinning showed a new yellow Statice from China, more curious than beautiful. A scarlet Geranium, with a white eye, called Mrs. Mayler, was shown by Mr. Conway, of Earl's Court. Many other new things were shown, but they were not remarkable. Upon the whole, this season has done more for Floriculture than the last four, and there is every prospect of improving both the spirit and the taste of amateur and professional florists.

HORTICULTURAL NOTES.

Calceolaria alba, (the white-flowered Calceolaria.)—A small shrubby species of Calceolaria, with opposite, remotely serrated leaves; and copious fascicles, or little bundles of leaves, from the axils of the principal ones; so far it possesses just the character of the C. thyrsiflora; but in this the flowers are white; or at least so little tinged with sulphur, or cream colour, as to be practically. They are produced in terminal elongated panicles, formed of small clusters, arranged above each other in an opposite position on the stem. It is a native of Chili; and has been lately introduced to the gardens of this country by Messrs. Veitch, nurserymen, of Exeter, who received the seeds from their collector, Mr. William Lobb. Having been so recently introduced, there is but little that can be said of its treatment: it will probably prove a hardy green-house plant. To those who are fond of hybridizing, it affords some points worth attention: large Calceolarias are generally too leafless; perhaps this might give rise to a race of bushy habit, and better furnished with foliage.

The Phloxes.—Few plants afford a much greater diversity than the numerous varieties of the Phlox: very tall, very dwarf, very large, very small, with all the grades between them, may be found in a moderate collection, and we shall not be surprised to see trusses of its bloom exhibited shortly like those of the Verbena and Petunia. We hardly know a flower more calculated to sport when once people begin raising them from seed in anything like quantities. No plants have been more neglected than a large class of border Perennials. They propagate themselves, and people hardly dream of securing seed or waiting for plants raised from seed; otherwise the Lychnises, Delphiniums, Lupines, and many others, offer the highest temptation to the florist. The Phloxes, however, stand preeminent for their claims upon the florist. They are already beautiful—many of them are worthy of the best place in the garden, and a diversity of colours would increase the interest of the family amazingly. Van Houtte has sent us over a Phlox sufficiently variegated to show that there is an inclination to sport; all we have to do is to persevere in the course which has been successful with other flowers, taking care that seed is saved only from the best varieties, and then again selecting the best from them, to go on breeding from. The Phlox family propagates itself like many other perennials, by spreading its roots, and the shoots from them, until, if left alone, a small plant will, in time, make a great patch that would cut out into a large number of rooted offsets, so that when you have a seedling that you think it desirable to propagate, all you have to do is to carefully take off all side-shoots from the root as soon as they are large enough to handle, and plant them out, six inches apart, in a good rich bed; or you may put them in pots, and keep them in frames. The Phloxes are sufficiently hardy to stand out all ordinary winters, and there is scarcely any one of the herbaceous perennials that can reward us better for any attempts we may make to improve the races. Now is the time to save seed for the most handsome of the sorts, and they may either be sown directly, in boxes or pots, so as to put them in a frame for protection during the winter, or you may save the seed until the spring, when you may sow it on the open ground, on some very clean bed, free from weeds and the seeds of weeds, otherwise you are sure to lose a good many seeds and seedlings, in getting rid of the weeds as they come up. When they are large enough, they may be planted out in good ground, and a fair open space; and all you need do afterwards, is to keep them very clear of weeds until they bloom, when you make your selection of the most striking sorts, and throw away all the rest.

MUNJEET, OR INDIAN MADDER.—The Munjeet grows throughout the whole course of the central hills of Nepal, and in a great portion of the upper region which is bounded by the snowy range. It is exported thence to the plains of India, by a great many routes, and through the Keroong Kooti, and other passes of the Himalaya, into the Thibet. In both countries, as well as in the Nepal, its use is confined to dyeing; although in the latter, much less of it is consumed than in the others. In Thibet, woollens are also worn, and always dyed. In India, the dye is used on silk or cotton. In Nepal, plain cottons are the general wear, so that its use is confined to the dyeing of coarse chintzes and woollens of the Bhoteahs who live near the snows. The range of country producing the Munjeet is of immense extent, embracing, as it is believed, the whole of the central region of the Himalaya, from the Sutlege to the most easterly feeder of the Burumpooterr. The following is the method usually employed in dyeing with the Munjeet. Woollens take the dye better than cottons, but it is used on both, and in the plains on silk. The cloth is first steeped and boiled in a decoction of the dried and pounded leaves of a tree called Songay by the Bhoteahs. The tree is common at Darjeeling, and is, it is thought, a Camellia. After the use of this mordant, the cloth is dried by exposure to the sun, and then boiled and steeped in a decoction of the Munjeet, to which is generally added a portion of the ferruginous deposits of the chalybeate springs which are numerous in Sikim. The metallic earth is said to fix the colour and to give it brightness, and the quantity used is proportioned to the depth of shade required. The tints of the Munjeet dye vary from a light crimson to a claret purple. The deeper shades (purple) are produced by adding a decoction of Walnut-tree root to the Munjeet and ferruginous earth. Other stuffs are also used to produce different tints.—*Indian News.*

OLD MANURES AND NEW DRESSINGS.—The result of many experiments on artificial manures for the cultivation of flowers is now before me, and the conclusion at which I arrive, so far as actual experience goes, is, that there is nothing that will, as yet, beat cow dung well rotted, horse dung well rotted, and leaves of trees well rotted, as dressings; and nothing to beat the top spit of a meadow, where the loam is good, as a soil. Peat mould to lighten it when required, and sand to promote drainage, are not intended to yield nourishment, but to temper the compost and regulate its texture. Guano is treacherous and uncertain. I am sure that the excrement of some birds which congregate in great numbers, and furnish a large portion of this, now, article of merchandise, is very different in strength to that of others; and the greatest uncertainty prevails as to the quality, unless it be analyzed. The best that I can find of various flowers *cultivated under the scores of new systems,* does not come up to the standard of the old growers, who were content with cow dung, leaf mould, and the remains of the dung from an old melon frame. I strongly recommend anybody who is trying to grow flowers for exhibition, to venture upon nothing stronger until they have tried several times on worthless plants, which would be no object.—*T. W.*

CALAMINTHA SYLVATICA.—This recently-discovered British plant is also a very handsome floricultural object. It is allied to the Mints and Sages. The flowers are pale rose-coloured, spotted with purple, or blood-red, and are produced in whorls along the stems. It is a plant naturally loving shade, with some degree of warmth and protection; and when placed in a garden which is damp, and with only a moderate portion of sunshine, it maintains its original character, and flourishes freely. If cultivated in a more sunny position, it becomes somewhat changed, the colour is deeper, and the proportion of inflorescence is increased; but the plant loses much of its natural elegance, and soon passes off, probably the effect of increased evaporation. When, however, the plant is placed in a situation where it can have an increased amount of light, without subjecting it to a greater degree of evaporation, as in glass cultivation, its inflorescence is much increased, and its duration not only not diminished, but actually increased also,—the same verticillasters (whorled spikes) continuing to produce fresh flowers, again and again, for many weeks,—so that the number of flowers produced from one plant is truly immense. Planted in a pot of good mould it thus grows freely, is a light and elegant plant, having at a distance much the appearance of a Heath, and remains for a long time very ornamental, the bright rose-coloured flowers never fading until after they have fallen, and at a season—August and September—when flowers for the green-house are getting scarce. It is easily propagated by underground runners.—*Dr. Salter.*

PRACTICAL GARDENING.

OPERATIONS FOR SEPTEMBER.—THE FLOWER GARDEN.

Dahlias.—September brings to the flower-gardener abundant labour. If he be exhibiting the flower of the month—Dahlias, his attention must be incessant. However careful he may have been in the earlier months, he will be kept on the alert by swarms of vermin; if he have been careful he will have enough to do; but if there has been any carelessness in the proper season, his case will be almost hopeless—whole collections of Dahlias have almost defied their owners to cut a dozen flowers; and, among good showers, it is an established rule that blooms mutilated by vermin are disqualified. All manner of contrivances have been used to protect solitary blooms when plants have been infested; but the ends of the petals are, in nine cases out of ten, destroyed before the bud has been sufficiently developed to be calculated on with any certainty. We have given caution enough upon the subject of earwigs—the most inveterate and mischievous enemy the dahlia growers have to provide against. We have already said, over and over again, that one killed in the early part of the season, is worth twenty at a later period; nor are caterpillars less mischievous, though much easier to detect. Among the many contrivances for keeping off the enemies of the Dahlia, the placing of the buds in a bag of gauze is one pretty successful, but it is apt to cramp the flower. Other plans for putting the opening buds on a small table under a flower-pot have already been mentioned. Cotton tied round the stem and daubed with tar will sometimes keep them off, as no insect likes tar; but it is, nevertheless, objectionable to the grower, who, in most cases, had better, by far, when the plants are first out, look for the plagues while scarce. As the plants are now growing rapidly, and, unless supported, are easily broken, extra stakes should be procured, and used for fastening up the side branches; let them be placed round the centre, one on each side only, so as to fan out the plant, instead of making it a round bush. We have already said, that blooms are the better for being grown in the open air, and covering injures them in colour and texture; nevertheless, if you are much plagued with earwigs, you must take some means of protecting them, and covering them completely seems to be the most effectual. If the weather be dry, syringe them all over, and water the whole of the ground they occupy, not merely at their roots, for the dry earth around would soon absorb it, and they would be but little aided by it—partial watering is of little use to anything. Whenever you select a bud, which you think likely to make a bloom, take off the end of the branch it is upon, and pick off from every part of the branch, and, indeed, of the plant, all the buds that are not useful, long before they are large enough to distress the plant. You may also take out weak, useless shoots, and such as are decidedly in the way of more useful shoots, but by no means follow the example of many, who cut the plant to a mere skeleton, under the mistaken idea that it increases the size of the few blooms that come. Thinning out judiciously the spindling weak shoots that are incapable of sustaining a fine bloom, and removing all the buds not wanted as soon as we discover they are useless, is beneficial; but the Dahlia derives too much benefit from its foliage, to render it desirable to lose too much of it. If the plants are growing vigorously, and indicating that they are in soil they like, it is not desirable to water them with anything but pure water; if, however, they are weakly, give liquid manure once a week.

Auriculas should be prepared for their winter quarters. The drainage should be examined, and if imperfect, should be made good; for the stoppage of water in the soil, for want of the means to run off, soon rots the fibres and cankers the root. Those which have been potted anew, and placed in their frame, may remain there; but the frame must, before the month is out, be placed where it is to remain all the winter, which, for reasons long since explained, should be on a hard dry bottom, such as rain, or the water which runs through the pots, should not soak in but run off; for this purpose, it should be sloping a trifle. The object of keeping them in frames after potting in August, or placing them there now, is to protect them the more easily against the violent or excessive rains of autumn; for as they are pretty nearly in a dormant state by the end of the month, they are better without much wet than with it, and are so all the autumn and winter. It has been thought by many old florists, that by having a pit deeper than ordinary frames are made, and placing shelves away from the bottom and up near the glass, the plants get the benefit of a free circulation of air. There is no particular harm in having shelves away from the bottom, as they are dry at all times, but they do not remove the mischief unless other points are also attended to: for instance, if the ground at the bottom of the pit be damp, which it must and will be, unless it throws off instead of soaks in the water that comes through the pots, the damp is as mischievous as if the pots were on the bottom itself. The damp which cankers the Auricula may rise to the shelves which are three feet above the bottom, as well as so many inches. The perfection of a bottom would be stone or asphalta laid sloping, or if flat, having sloping grooves that would carry off every drain of water that went through the pots; but no freer circulation of air is wanted than can be given with a common garden frame and light. There is not height enough to make the air stagnant among the pots, and when the light is off they do as well as in the open air. Another great source of damp and its evils, may be found in the careless practice of throwing the dead and dying leaves that are picked off into the frame, instead of outside; it is a very bad practice, for nothing creates more, nor a worse description of damp, than decaying vegetation. Seedling Auriculas require watering while they are growing, and want all the air that can be given in dry mild weather, though they must not have the burning sun. If they are in their seed pans, their young roots have hardly made way enough to bear the scorching heat of the midday fine weather; and if they are in their single pots, the sun would bake their young fibres and greatly distress the plants, which, instead of growing, would have to make new ones, or die for want of nourishment altogether. The various modes of making a hard dry bottom to frames are not all equally good. The regular asphalta is a good bottom, but not always to be had; mostly, however, we can get at lime and gravel, which form a very good concrete; and when mixed up, and laid level about three inches thick, the consistence of thick mud, and smoothed down, do well. Many lay down bricks or tiles, and they make a sort of shift for want of better; but, unless they are laid down with good mortar or cement, the wet soaks between them instead of running away. And if we are very particular upon this one subject, it is because all the diseases which have defeated the Auricula grower, and sickened hundreds from attempting them at all, may be attributed to that which has never been half guarded against—a stagnant damp floor. Let this object, therefore, be the first that you secure; next look to your stock, and buy any good ones that you have not got. Now is the time to buy reasonably, and we like to see a frame well filled during winter.

Carnations and Piccotees.—These are occupying almost every florist's attention, not only for their beauty and fragrance, but from the competition which is being created in most parts of the kingdom. Now is just the time to pick up plenty of the best flowers, before people take the trouble of potting for the winter; but some growers have not yet got layers fit to take off. The taste in these matters is rapidly advancing, and Piccotees and Carnations that were esteemed years ago, for want of better taste in some respects, and better flowers in others, are thrown out of good collections. Where the layering was done well last month, they will have struck root, and be fit to pot by the end of this, about six weeks being sufficient for the most difficult and reluctant of the varieties. When they are well struck they are better cut off the plant, even if not potted off directly; but the sooner they are potted, after being well rooted, the better in every respect. The best plan of potting the

Carnation, is in forty-eight-sized pots, two in a pot, though many use large sixties, and place only one in a pot; but as they are always bloomed in pairs at least, if not threes, they are far better stored in pairs. Use for the soil a good light loam, in which the turf has rotted, and, if it be too adhesive, mix a little sand very judiciously. Let the pot be one-third full of crocks or sherds, and the remainder be filled with the loam. Plant the two layers (having first, with a clean sharp knife, cut off the unrooted portion of the stem up to a joint), opposite each other, against the sides of the pot; shake the earth well down, but do not press it, and water the whole of them, to settle the earth about their roots. They may be placed at once in their winter quarters, and be treated like the Auricula, for they are as easily damaged by damp as anything we know of. The effect of the damp in Carnations and Piccotees is mildew, which develops itself in spots over the foliage, and will sometimes render a whole collection unhealthy. Let nothing, therefore, that we have recommended for the Auricula, be neglected, for there the importance of the dry bottom, plenty of air, very moderate or hardly any water, is, in all respects, as great. Seedling Carnations and Piccotees may be either planted out on a well-raised and drained bed of good loam, or potted singly in large sixty-sized pots: the circumstances of seedlings being different to that of named flowers. If they were potted in pairs, each pair, to use an awkward phrase, being two odd ones, you could not throw the worthless ones away without disturbing the other; and if they were to be planted out in spring, each plant ought to be, at least, six inches from others in the same row, and would be the better for nine; so that, if potted in pairs, the ball of earth would have to be disturbed, to the manifest injury of both plants. In the winter months they should be protected against much frost. It is not a little that would hurt them. A very good author in practical matters, says, "I find it necessary to give them plenty of air, and keep them perfectly free from damp. They require no more than this, and it is quite a matter of indifference how this is done."

Bulbs.—Purchase these always as soon as they are imported, and, according to the uses you are going to put them to, so you must dispose of them. If they are for forcing, the sooner they are potted and put in a dark place, the better. They will not make any progress for some time, and it is a common, and, perhaps, an easy plan, to place them together in the part of the garden where they would be most out of the way, after they are potted, and so cover them four inches with sawdust, dry tan or ashes. From this place they are taken from time to time, as wanted, and placed in the forcing frame or pit, to be forwarded according to the period they are wanted to bloom. This will apply to all bulbs that are to be forced, or grown and bloomed in pots.

Hyacinths.—Half of such as are to be bloomed in water, should be immediately placed in their glasses, and taken into a dark cellar or cupboard at once; care must be taken that the water reaches the bottom of the bulb, until the roots are developed sufficiently. Change the water once in three weeks. The other half must be kept in the dry for a month longer, before they are put in their glasses. Those Hyacinths destined to be planted in the open ground, may be planted in two seasons, or both the early and late flowers at the same time, but not in the same bed. It is certain that there is as much as three weeks' difference between the sorts called early, and those considered late; and for planting out of doors in a bed, the one is quite incompatible with the other. Wherever the bulbs are purchased, the most distinct instructions should be given, that all the assortments must be picked to bloom at the same time. It is also essential that you do not try to grow many varieties in a bed of this description. None but the dwarf compact blooming varieties should be attempted, for it does not do to be obliged to tie up, or support in any way, the plants to form an arranged bed of flowers. In the arrangement, too, it will be proper to observe contrast and uniformity. The colours should be diversified, but so also must be the planting. The bed should in effect be the same as that of Tulips. Seven bulbs in a row, and the rows across the bed to be six inches apart, so that whatever be the length of the bed, the flowers will be six inches apart every way. The next point to attend to, is to see that no two colours come alike, or even nearly alike, in the same row, either across the bed, or along the bed. It is, in fact, more than half the battle to make the colours come uniform and pretty, and to carry the diversity as far as possible. We should only have as many sorts as there are colours, and those should be the most dwarf and most compact, as well as the most bright we could find, that would all bloom at once. *L'amie de cour* is a good specimen of the kind we should look for to plant in a bed; it is a decidedly dark blue, blooms almost down to the ground; and we should want the best, light blue, dark red, light red, white, and yellow, we could get to arrange with them. Of the sorts adapted the dealers are the best aware, because it is their business; and if the one we have named be mentioned to the parties, as the style of plant wanted, they will find the other colours. With these six varieties, we should form one bed, so that no two dark flowers come together in the same row, either along or across. The following arrangement, although not difficult or intricate, is the very best for effect that can be adopted, and nothing can be much more easy to accomplish.

Dark Red	White	Light Red	Dark Blue	Light Red	White	Dark Red
Light Blue	Dark Red	White	Light Red	White	Dark Red	Light Blue
Yellow	Light Blue	Dark Red	White	Dark Red	Light Blue	Yellow
Dark Blue	Yellow	Light Blue	Dark Red	Light Blue	Yellow	Dark Blue
Light Red	Dark Blue	Yellow	Light Blue	Yellow	Dark Blue	Light Red
White	Light Red	Dark Blue	Yellow	Dark Blue	Light Red	White
Dark Red	White	Light Red	Dark Blue	Light Red	White	Dark Red
Light Blue	Dark Red	White	Light Red	White	Dark Red	Light Blue
Yellow	Light Blue	Dark Red	White	Dark Red	Light Blue	Yellow
Dark Blue	Yellow	Light Blue	Dark Red	Light Blue	Yellow	Dark Blue
Light Red	Dark Blue	Yellow	Light Blue	Yellow	Dark Blue	Light Red
White	Light Red	Dark Blue	Yellow	Dark Blue	Light Red	White
Dark Red	White	Light Red	Dark Blue	Light Red	White	Dark Red
Light Blue	Dark Red	White	Light Red	White	Dark Red	Light Blue
Yellow	Light Blue	Dark Red	White	Dark Red	Light Blue	Yellow
Dark Blue	Yellow	Light Blue	Dark Red	Light Blue	Yellow	Dark Blue
Light Red	Dark Blue	Yellow	Light Blue	Yellow	Dark Blue	Light Red
White	Light Red	Dark Blue	Yellow	Dark Blue	Light Red	White
Dark Red	White	Light Red	Dark Blue	Light Red	White	Dark Red
Light Blue	Dark Red	White	Light Red	White	Dark Red	Light Blue

The best mode of planting is to dig out the space intended for the bed, four feet wide and a foot deep. At the bottom put a couple of inches thickness of rotten cow-dung; mix with the stuff taken out, be it what it may, sand enough to lighten it, and one-fourth of its bulk of rotten cow-dung; fill up the space with this compost level with the top. Then run a line down the middle, and with the back of the rake, cause the line to make its mark; make then other marks on each side of this outer mark six inches apart, and there will be six inches on each side of the bed unoccupied; with a straight piece of a rod, four feet long, let two persons, one on each side the bed, make the cross marks; and to do this correctly, each person must measure six inches from the last mark. This marking will point out the place for every root, that is, where the lines intersect each other; on these points place the bulbs, pushing them gently into the soil; then throw the rest of the soil on the top, to the depth of four or five inches all over the bed; chop the sides square, remove the spare soil, and leave them to their fate, until they come above the ground, when, if you are particular about preserving the flowers long in perfection, you must place hoops or irons over them, and cover with some waterproof cloth or calico, that does not exclude the light. When they flower, they will be equally benefited by keeping off wet and sun, and they will preserve a splendid appearance, infinitely more brilliant than they would by any other arrangement that could be adopted. In planting Hyacinths in the borders they look best in groups, including all the colours, or alternately the three light and three dark. For instance, dark red, dark blue, and yellow, in one; and light red, light blue, and white, in the other. Many, however, plant three of a colour in one patch, and so have all the patches of a self colour—every six patches the colour comes over again; we prefer having three different or six different colours in every patch.

Crocusses, Narcissuses, Frittilarias, Lilies, Irises, (of all kinds,) Snowdrops, Jonquilles, Early Tulips, and many other subjects, though quite as well planted next month, and not much worse the month after, gain strength by early planting; and may be done with advantage in places where the borders, beds, or grounds, are at liberty towards the end of the present month. Narcissuses and Jonquilles, when planted in borders, must be placed further back than Hyacinths, as they are generally taller, particularly the large sorts of Narcissuses. Regard must also be had to the colours, as those white and yellow are very striking. Early Tulips are only fit to group in borders alternately with Hyacinths; they are very brilliant, and the greater part of them are not much taller. Snowdrops look well anywhere, but best at the foot of a shrub, or under trees—anywhere in the shade, and always require to be in tolerable large patches, or they look insignificant. Crocusses are often placed as a sort of inner edging, which, to us, is very mechanical, and anything but effective; good patches formed in the borders, but some considerable distance apart from each other, look bold and bright, particularly if kept to their own colours in each patch; there should be from six to twelve in a patch. If they are to be taken up at the end of their season, there may be a dozen; if they are to remain two years or three, then half-a-dozen, or even less will do. But it must be remembered, that although all bulbs are stronger for early planting, they are not actually suffering from being out of ground, until the tap of their roots begins to swell, for then, if in the ground, their fibres would at once shoot out and find nourishment.

While upon the subject of bulbs, it may be well to observe, that where any have been left in the ground, and it is at all desirable to remove or thin them, this is a very good month to dig them up and replant them; but they will, in many cases, be found germinating again, the fibres pushed down a considerable distance, and the removal in such case always checks them. For this reason, the earlier in the month any removals take place the better. The soft scaly sort of bulbs, such as many Lilies and the Crown Imperials, with all their families, ought never to be out of the ground a day; but by packing them at once in sand, so as to keep the air from them, they are kept out for months. This alone causes the bloom to go blind, and makes it uncertain about getting a flower the first season of planting. Crocusses, Gladioluses, and such like, may be out for months, and be none the worse. This, however, should be only once in three seasons; all such bulbs increase faster, and bloom stronger, the second year than the first, and do not get much worse, if any, the third year; but they would deteriorate in size after that period, though they might not increase in any less degree.

Tulips.—These, where grown in a bed, are splendid subjects, but the named varieties are what are generally called late Tulips. The planting time for these is October and November; but all collections require revising, and to a certain extent re-arranging, before they are planted. The Tulip book which is the guide to a bed, should be always in the grower's hand, with a pencil, during the whole bloom. He should make remarks against every one that is not of average quality and proper height. If they are worse than the average, he should say so; if better than the average, he may make a star, or cross, or tick, that he can understand; and if extraordinary, he may state so; or make more than one star or tick. Suppose we, as an example, turn to the twentieth row in a careful man's Tulip bed. Say we found it thus, that is presuming it was kept properly:—

ROW TWENTY.

1. *Camuse de Craix.* +.
2. *Salvator Rosa.* Rather heavy in colour.
3. *Polyphemus.* Splendid.
4. *Rose Emily.* Wrong; a byblomen.
5. *Polyphemus.* Fine, but a good deal of colour.
6. *Salvator Rosa.* Very fine indeed.
7. *Camuse de Craix.* Very small; no bloom.

Here it is necessary to remove the Camuse de Craix for a blooming root, and the Byblomen out of the middle for a Rose Emily. In this way, during blooming time, everything ought to be noted that is out of the ordinary way. Many will remove a flower because it is heavy in character or colour; and if too heavy, and you have plenty of good ones, it ought to be removed, because it is likely to go heavier instead of lighter in the covered bed. In too many beds there is a total want of arrangement as to colours and kinds; but as enough has been said on this subject in a paper quoted formerly, all we shall say here is, that some of the best collections in the country produce a bed inferior in appearance to even those of young beginners, who evince much more taste with their limited means, than some of those whose stores are almost endless. This month should be a busy one with some old growers, who instead of having Byblomens, Roses, and Bizards, jumbled together with inconceivable confusion, should be looked up to for something better. The finest drawing-room in the world, with the finest furniture, huddled altogether without order and arrangement, would not be a more out-of-the-way object than the beds of Tulips grown by people who are the most rich in the possession of fine flowers; and yet year after year passes, without their bestowing the attention that is required to arrange them properly. The fact is, some of the fanciers are so deeply engaged in their admiration of particular flowers, or of what we may call individualizing, that they never once contemplate the Tulip bed as a whole. Like the honey-bee, they go from bloom to bloom, but never consider the bed as a complete object. One-half of the most enthusiastic growers have their treasures in their out-beds; instead of which, their show-bed should be arrayed with the best things arranged in the best manner. Pray, gentlemen, use the present month instead of next, for examining your boxes of bulbs, comparing them with your book; or, which would be infinitely better, take a paper and draw out the square of your boxes, and make your bed entirely new. Take the very best middle-row flowers you have, to the number of your rows, one-third of each class; insert them in the middle squares, Rose, Byblomen, and Bizard, Rose, Byblomen, and Bizard, all the way to the end. Not only take your very best sorts, but the best bulbs of each sort; but at present we are only on paper. Then look to your rows next the middle, and insert just the same way; but begin them with Byblomen, Bizard, and Rose, Byblomen, Bizard, and Rose; inserting the names of all the best adapted flowers you can think of. Most of the middle-row flowers will do for the next rows; but wherever you use them, keep them a little way off the centre ones of the same kind. Then insert your second-row flowers, which must be begun with Bizard, Rose, Byblomen, Bizard, Rose, Byblomen, all the way along; and lastly, insert the names of outside-row flowers, which begin as the middle row. There are many flowers which cannot be too plentiful in a bed, because of their delicacy and beauty, or their grandeur. Whenever you find yourself short of duplicates, buy or exchange, rather than fail in this point. Give an hour or two a-day, or one or two evenings a-week, until you have at least improved, if not completed your arrangement; to aid you in which, look to the article on the subject of Tulips at page 362.

Perennials that have gone out of bloom may be parted, either by taking off portions of a large patch with the spade, so as not to disturb the main portion, or by digging up altogether, and chopping or tearing it to pieces; the smallest bit with a root, and in many cases without a root, will grow. Where, however, they are in a border, and have spread out large, it is the better way to cut off with a spade all but the quantity you wish left. It is a good plan, because the portion that is left is the better for the removal of the rest. The portions cut off may be parted into as many pieces as are wanted, and planted out in nursery beds to grow; but if you have any other borders to ornament, the pieces may be left large enough to make a good show, and be transferred at once to the place they are to bloom in. This treatment applies to almost every perennial subject in the borders; and cannot be too well looked after with all the plants you wish to increase.

Tender Plants in the Borders and Beds.—Towards the end of this month you must take up all the Geraniums, Verbenas, Petunias, Fuchsias, Calceolarias, and other tender plants that have been potted out and are wanted again; otherwise they are just as well out of doors, to live as long as they will. If they are still flowering, they may keep on till the frost stops them. Such, however, as are valued, should be taken up and repotted; and the heads should be cut in rather sharply. The cuttings may be crowded into a small pot, and allowed to take their chance in one of the garden frames; where, if they are watered occasionally, they will most likely strike root, and be useful in the spring. Verbenas, so useful for bedding out, will supply healthy cuttings at the beginning of the month, if required; but generally when they are taken up, they may be cut into scores of pieces with roots at every one; for inasmuch as they are or should be pegged down as they grow, they strike at every joint. Petunias require more management, and their cuttings must be covered carefully with a bell-glass. As, however, but few of the number planted out are generally required for the stock, they may be selected where they will be least missed, and the remainder left to take their chance till out of flower. Verbenas, Petunias, and common Geraniums, could be preserved during the winter very easily, and by a very simple means; a hole dug just deep enough to hold them when covered over with a flat surface, and the pots placed therein, may be covered with boards, or with bent rods, to form a slight roof; so that mats, or, which is better, waterproof calico or canvass, that will not shut out all the light, can be thrown over in bad weather. Many persons use hoops and mats only, but they must be very much covered, and close down to the ground in hard frosts, or they will suffer. Nothing, however, is much more simple, nor much cheaper, than a common garden frame and lights; and no garden, even a small one, ought to be without such a thing, for almost anything can be kept in them with a moderate degree of care. Even Geraniums have been wintered with merely the precaution of turfing round the wood-work to keep out the weather, as the wood is generally soon penetrated by frost. In a preserve for tender plants, the efficacy of waterproof transparent material, which keeps in the natural warmth of the earth much more than thicker material that is not waterproof, is manifest.

POLYANTHUSES may be still taken from the seed-bed or the seed-pots, and planted out in a sheltered border, where there are no slugs; for if there be any, immediate steps must be taken to get rid of them. A strong border of lime will keep them off altogether, if they are not in the bed itself; but if they are, the remedy must be prompt. The border of lime must be placed to keep off all comers; and cabbage or lettuce leaves must be laid over the bed, to attract those already there. In twenty-four hours pretty nearly all that are in the soil will be attached to the under part of the leaves; and this repeated two or three days, will clear it altogether; but the lime must be fresh down now and then, as constant rains take away the efficacy or pungency of the lime, and the creatures can then crawl over it with impunity. This well looked to, the seedlings may be planted out six inches apart all over the border, and watered in to establish the mould about their roots. If the soil is naturally poor, water occasionally with water in which decayed cowdung has been mixed, to the amount of a good spadeful to six gallons, and well stirred up, so as to spread over the bed on watering, and not to settle at the bottom of the vessel.

PINKS should be planted out before, but the present month is by no means too late. They ought not to be in the bed they are struck in so long as this; and if they have been moved before, they have been more trouble than if removed when struck to the place they are to occupy. However, this is a very good time to make a Pink bed, which should be rich and clear of vermin; the wireworm, the most intolerable of all enemies to Pinks and Panseys—perhaps to everything else, can only be destroyed after catching; for so far as we have learned from positive experience, everything we have tried that destroyed the worm, destroyed the soil for the plants, and killed them also. There may be a time when we shall find a remedy; that, however, has not we think arrived yet. Planting between the Pinks something that the wireworm prefers, such as Lettuce, Carrot, Daisy roots, and some other subjects, will divert their attention, and if frequently pulled up will destroy thousands; for they work their way into whatever they attack, and cannot extricate themselves very quickly, but there remain to be taken and destroyed. It has been affirmed in one of our best authorities, that sowing White Mustard over a piece of infested ground will completely drive away or destroy them. We have not seen this tried, and much doubt it as a permanent remedy. It may drive them down for a season or so, but we cannot look upon it as any more than a temporary riddance, and should look for them again, whenever we sowed a crop more congenial to their habits and feelings. We have planted Lettuce, Carrots, and even Daisies, among Panseys and Pinks, and caught thousands, while the attacks of the vermin appeared to be confined to the subjects we placed to invite them.

ANNUALS may be sown to stand over the winter in the beds and borders; so also may they be sown in a sheltered place to be planted out in spring; but those which stand the winter where they are sown, flower earlier, and stronger, and better than those planted out. Some of the kinds usually planted out in spring, may be sown under a garden frame and lights, so as to be protected from hard frost, and from that which is frequently more mischievous—excessive wet. Nemophilla insignis, and other varieties of the same plant, makes an excellent stock plant in pots. Mignionette, Ten-week Stocks, Indian Pink, German Wallflowers, and many other subjects, are sown in pots, kept in a frame till the spring, and then plunged or planted out in the borders or beds.

SEEDLING PERENNIALS and BIENNIALS may be planted out in the beginning of the month where they are to bloom, but they come much earlier when planted out in August. Columbines, Sweet Williams, Rockets, Wallflowers, Canterbury Bells, Stocks, and other plants of similar habit, may be planted out in nursery-beds, or in the places where they are to bloom. In nursery-beds they require to be six inches apart in the rows, and the rows should be a foot apart.

PANSEYS may be still struck under a common hand-glass, but they must be well covered, in case a sudden frost should attack them in their young state. The choice sorts may be struck in a frame, with a little bottom heat to assist; but it is quite unnecessary, except to hasten the striking a little, which is often desirable with new varieties. Those in old beds may be cut down pretty close to the ground, and earthed up a little, when they will throw up plenty of shoots, which may afterwards be torn off with roots attached to them, and fit to plant out. Panseys already struck may be formed into new beds, and will be ready for very early flowering in the spring.

SEEDS.—Gather from all kinds of flowers from which you require them, and the flower stems of all that are not wanted to seed should be cut down. The seed, when gathered, should be laid by in the pods, in some dry, airy place, to get thoroughly ripened and dried before you attempt to rub or thresh it out.

Box and other Edgings should be trimmed, dressed, and mended; and perhaps by the time glass borders of the fancy kind are made for our edgings, this trouble will be saved; for nothing has been the cause of more discussion, or so much labour, as the subject of edgings, and the edgings themselves, when adopted. Box is unquestionably the very best of all plant edgings; it is cleaner, neater, and more effective than anything; but it has its disadvantages. Slovenly gardeners sweep all its beauty away, clearing the gravel walks; idle gardeners allow it to be the harbour of refuge for slugs, snails, and other vermin; careless gardeners spoil it and make gaps, when digging the beds and borders; but all this stands for nothing, while neat, and cleanly, and handy gardeners can be found, who preserve hundreds of yards of Box in all its natural beauty and elegance. There is no substitute worthy of a favourable mention. Where there is a gap, fill it up; trim it all over alike, and never be afraid of the shears.

STOVE AND ORCHIDEOUS HOUSE.

This may be called the feeding house; or, if separate, the feeding house of the conservatory, and best rooms of the dwelling house. In this department plants are hastened into bloom all the cold months, and prepared by hasty or early growth after bloom for the next year's forcing. All the plants which have completed their growth for the season, should now be placed on short allowance, as regards both heat and moisture; because, when they have completed their growth, they require rest. All kinds of bulbs may be expected to begin swelling and growing, and in tolerably large collections many will be rising for bloom. Of the Amaryllis tribe, many will flower from this time onwards, and keep a constant supply of bloom from now till they have all flowered. As soon as they, or any of them, are seen to start, shift them carefully, without disturbing their balls of earth, into pots a size larger, with some rich compost, say sandy loam, peat, and decomposed dung, in equal quantities; if the loam, however, be taken from under the surface, and be not the produce of the rotted turf we are always recommending, let there be an equal part of leaf mould; thus making the compost four equal parts instead of three. When thus shifted let them be watered, to settle the earth about their newly forming roots, and place them on, or in the tan, in preference to the shelf. The size of the flowers will be greatly increased by this timely assistance. All the bulbs which have not started, may be continued without water, for they will best indicate their want of attention by starting into growth. Orchideous plants and other subjects that have made their growth, require the same rest, that is, require to be kept dry, instead of being watered, and placed in the least exciting part of the house. Where we have been compelled to make the same stove do for propagating, stove plant growing, and orchideous plant culture, we have always met their requirements by placing all that have done their work, on, or hanging to, a dry top shelf, at the cool end of the range, and in front, where the heat was still less than it is in the high part of the ridge. Here all subjects are easily got at, and nothing but slight flagging would induce us to water them. This period, too, requires that we should be constantly on the look out for those unbearable pests, the mealy bug, the scale, and red spider, and apply the usual and previously recommended remedies before they get a-head. As a general rule, whenever a stove plant, or any of the orchideæ, start for new growth or run for bloom, encouragement should be given. Nature always makes the effort; art should instantly assist.

GREEN-HOUSE AND PITS.

Calceolarias in pots should have their side-shoots or off-sets taken off, with the little roots attached, and be potted in large sixty-sized pots, in light good loam and dung, perfectly rotted, and these in equal quantities. The old plant should afterwards be earthed up; but as the present mode of showing encourages the size rather than the beauty of the plant, and the number rather than the size of the flowers, you must act according to the intention you have. If we had to advise florists, the public should never be indulged with size at the expense of consistency. The herbaceous Calceolaria, like the Polyanthus, the Auricula, and twenty other fancy flowers, could be spread so as to fill a peck pot, and for aught we know, a beer-cooler, ten feet over. They keep throwing out side-shoots from the root, which spread out until, by the mere process of parting, they would form scores of plants. How, therefore, people can show large patches of Calceolarias, formed of a score or more rooted plants, as single specimens, we know not. The proper way of showing them would be to take off all side-shoots, and use them one-year old, the same as Pinks. But shrubby Calceolarias should, like Geraniums, have but one stem next the ground, and all their branches should be started fairly above. The side-shoots, therefore, of these, and many other similar plants, should be taken off for increase, if with a root to be potted directly, and if without to be struck under a glass; the old plants to have fresh top-dressing.

Fuchsias are still blooming, but it is a very good time to take off their young growing shoots, or to cut in the plants, and put all the cuttings in for increase. They may be crowded into a pot of common earth, to endure the whole winter, if they are likely to be wanted to bed out, but nothing should be increased wantonly. It is an evil to be overstocked, therefore all increase should be limited to the subjects you want, and the number you require of the subject.

Seedlings of all kinds, when large enough, should be planted out into pots or pans, to give them room to grow, and eventually they may be potted into large sixty-sized pots, to grow until they fill the pots with roots, when they must have a size larger; then seedlings that were potted out earlier, and have filled their pots with roots, must be shifted into pots, the size forty-eight to the cast, and placed on the shelves where they are least in the way, or they may be removed into pits.

Camellias may be inarched still where there has been any excusable cause of delay, but they must be removed into a warmer house than the green-house, and care must be taken that both the stocks, and the intended plant to inarch, are healthy. Cuttings of single Camellias, to be used as stocks, may be taken off, and struck in sand, with a little bottom heat. People do say the cuttings need no longer be cut at an eye, for that the smooth wood will strike as well as a knot or joint. Struck cuttings of stocks should be potted off in single pots, and placed in a frame or pit, to be protected from heavy rains, and if necessary, from frost also.

Geraniums, which have been headed in, and stood out of doors for a while, may, about the middle or towards the end of the month, be brought in, and placed on the green-house shelves; from the time, however, that they are in there must be plenty of air given, and the house should be clean and dry.

Green-house Plants in general, such as the Botany Bay plants, Hoveas, Acasias, and other miscellaneous subjects, must be all placed within their winter quarters, but they must not be crowded. Plants want room; not merely room to grow, but room for a very free circulation of air. Plants get drawn as much from crowding as from anything, and cannot be healthy when they have insufficient room. All kinds of plants that have been standing out of doors, require to be examined as to the state of their roots, their drainage, and the soil they are in. If their roots are matted, they must be shifted carefully into larger pots; if the drainage is defective and the soil has become soddened, the greatest care will be required in remedying the defect, and it is often useless. The old drainage must be removed without injuring the fibres of the plant; a clean new pot, somewhat larger than the old one, must be got, and as much of the ball carefully removed as can be done without injuring the root, in fact, without disturbing it, for it cannot be disturbed without suffering. With some fresh loam, dung, and peat, such as is usually taken for potting the description of plant in hand, (first filling up to somewhere near the height of the old crocks, with new and dry ones, and some of the fresh mould at the top of them,) place the plant in the new pot fully as high as it was in the old one; fill well round the outside, pressing the soil down between the edge of the pot and the ball of the plant. Those which are merely matted, only require shifting to a size larger pot, and more soil to fill up. These plants should all be placed in the winter quarters before the end of the month, as after the middle there is no dependence on the absence of frost one night over the other, and not one season in ten escapes the month quite through without frost enough to damage most of the inhabitants of the green-house. The same plants which many keep in the green-house will do just as well in pits, and some will do better. Camellias and Azalias do far better without the least degree of artificial heat, so that they are covered up enough to keep off frost; and besides this, pits are used for the whole tribe of plants to bed out. For Calceolarias, Verbenas, Petunias, Fuchsias, and the Alpines, pits are as useful as a green-house in all respects, but the plants for both green-house and pits are so nearly alike in their requirements that the management of one would almost do for the other. Yet the green-house has the advantage for soft wooded plants, because a fire can be lighted to get rid of the damp which would hurt these, while it would not incommode some others.

THE CONSERVATORY.

Here we are losing some of our summer favourites, and are reduced to the supply which the autumnal flowers afford, aided by what can be obtained from the stove. A few orchideous plants, and some of the old favourite exotics, sprinkle the place here and there, but Annuals, Mimulus, a few of the creepers, and Roses and Dahlias, make up a fair show of flowers. The Datura or Brugmansia, in the several varieties, Sanguinia, Luteæ, Suaveolens, and Knightii, are the most conspicuous objects, and perfume the house almost to faintness. The only thing we can recommend now, is cleanliness, great industry, and taste. Autumnal and perpetual Roses afford the greatest assistance at this juncture. The Oncidium papilio, whose butterfly blooms sport in the breeze like the fluttering insect it is named after, and which should be grown in all plant collections by scores; to be able at all times to find some, is a most conspicuous beauty. The ground may be decked with Stocks, Mignionette, and the showy annuals; above these, the Skyzanthus, Balsam, and Humeæ elegans; the Evergreen back-ground may be secured, by removing in the large Camellias, Orange-trees, and Rhododendrons, and well-grown plants of the Dahlia will give life to the scene where flowers are wanted. The same care and attention must be used as regards the cleanliness of the shelves, stands, beds, and borders; the removal of subjects declining from others in their prime; and as the Conservatory is the only house to which people are invited in general, whatever is in flower in the stove must be brought there, and even plants only valued for their foliage must be put in requisition.

KITCHEN GARDEN.

This month brings its work in the kitchen as well as the flower and fruit garden. There is much to gather, as well as to plant; and there is hardly a busier month in a well-kept garden, although none of the great operations are undertaken till October. In the first place, there are many crops to clear off the ground; a large portion of the potatoe crop is ripe, and when a potatoe is ripe, it should not be left in the ground, for if there be any vermin, they will attack the tubers. Peas, Beans, Cauliflowers, Cabbages, and sundry other matters, are cleared off one after the other, and the ground should not be idle. Dress the ground where it is required, and dig or trench it for the various crops that are to succeed them. It is almost impossible to foresee the effect of the coming winter upon the vegetable world, and for this reason, we never waste a cabbage stump; take them all out to dig the ground where they have stood, and plant it with something else, but plant the stumps close together, in the least valuable part of the garden; they will afford a dish of greens occasionally in hard weather, when scarcely any other supply can be had; and if they are not wanted, very little room has been taken up by them. Those who defer drying herbs until now, must do it while they can. We always prefer cutting and drying them, when the juices are all in them, and the flavour comparatively high, but we must mention some subjects separately.

Onions must be harvested, for they have grown as large as they will grow, and ought to be gathered in. If the green leaves have not turned yellow, break them down, and in a week or so afterwards, draw them, leaving them on the surface to ripen a little. This is August work, but there is plenty not yet harvested, and the sooner they are in the better. When they are thoroughly dried, they should be stored in a dry but cool place; an upper story is preferable to the ground floor, but, if it be too near the roof, and liable to be heated, they must not be trusted long there; generally speaking, the onion wants as much care as the apple to preserve it well, and too little attention is paid to them, for the instant they begin to vegetate, they lose in quality, until from the most wholesome vegetable, they become quite the reverse.

Cabbage Plants.—This is the most universally useful of all crops: they are always eatable, always in season; from the time they have few leaves to the period they are a hard-hearted heavy vegetable, they are wholesome as well as palatable, and in all stages of growth, desirable. Cabbage plants may be planted out now in any spare quarters, close as five or six inches from each other, in the rows, and the rows need only be wide enough apart to walk between them, for the purpose of hoeing them up, and clearing away the weeds; say fifteen to eighteen inches. In the winter, every other one may be drawn to boil as greens, and give the rest more room to grow; farther into the winter, every other one may be taken again, which will give full room to cabbage, and they will come in early and fine.

Cauliflowers.—The late sown ones to be kept over the winter, must be protected as much from heavy rains as frosts, and the best way to do this is, to get a garden frame, and select a spot of ground, well drained; this should be dressed and dug just the size required for the frame, as much as the frame will cover; rake this even, and from the seed bed plant out three inches apart, as many as will fill the space. This done, and the earth settled about their roots, by a gentle watering, place the frame in its proper situation, and put on the glass for twenty-four hours, shading if necessary from the heat of the sun. But it may be that there is no frame; next to that in point of usefulness is a covering of hoops and mats, or hoops and a waterproof material of some kind. Neither of these coverings, however, are to be kept on, except to keep off violent rains and hard frosts; plenty of air must be given at all times. Others who have only a few plants may cover with a hand-glass, and protect enough for their use.

Celery.—Earth up from time to time as it advances; take care to perform this in dry days, to keep the earth out of the heart of the plants. Young plants may still be planted in a slight drill, although they will only grow enough for soups. This young stuff must have the benefit of rich earth, and the safest way to secure its growth, would be to dig in some rotten dung along the line, before it is planted; the drill must be very slight, for it cannot grow much.

SALADS should be treated all the year alike, or nearly so, but plenty should be sown in frames where a winter supply is required. All the sorts of Lettuces, small Salads, as wanted; Radishes also. Onions for drawing very small may be sown among the Lettuces, to guard against the destruction of the out of door crops. Lettuces may be planted out in warm protected borders. Endive and Lettuces may be blanched by being tied up with bast matting, and that which has grown enough, may be pulled, and kept in mould in a shed or outhouse, or covered with kale pots out of doors, for it will preserve them in the hardest winter.

WINTER SPINACH.—Thin out the plants to nine inches apart; this is, as we have before observed, kept in use a long time, by gathering only the outside leaves, and suffering the others to grow, consequently it must have room to grow, and be always kept clear from weeds.

POTATOES that are ripe, must be taken up and preserved in appropriate places, where neither wet, frost, nor heat can reach them; the large growers dig a pit a foot deep, in which they heap the potatoes, then top them with six inches of straw, and then cover with as much thickness of mould.

FRUIT GARDEN.

IN the fruit garden there is a busy time coming on. The gathering of fruit at proper seasons is a very important affair, for a few days too early or too late will make all the difference between rotting and keeping. In the case of apples, cut one open, and if the pips are turning colour, that time, or any day within a week, will do; if they are still white, let them hang longer. Choose a dry day for gathering, and for fruit that is to keep let them not fall one inch, for however slight a bruise may be, it is sure to bring decay at that part, sooner or later! The hundreds of modes of keeping fruit, recommended by different authors, leave us no better satisfied than we were with the old plan of laying them on shelves singly on straw, in a dark apartment, and occasionally examining, wiping them, and throwing out the damaged ones: where a fruit, however, has to be kept months before it is ripe, packing in boxes or baskets may be resorted to, for a portion of the time; but generally we have found that after resorting to fifty different modes of various degrees of troublesomeness, people have returned to the old and generally efficacious plan of laying them on racks or shelves, singly, on straw, and paying attention to them whenever they were damp from sweating, or otherwise. Gathering Peaches, Nectarines, Plums, and stone or pulpy fruit, is quite another affair. These can hardly get too ripe on the tree, and it is well to contrive to fasten a net against the wall, sloping outwards, but forming a bag, so that what falls should not be damaged for the table. Where any fruit on a tree varies as to the time of ripening, they should be frequently examined, and the forwardest taken. By this plan you may be gathering a considerable time, and have all in perfection.

INSECTS are the cause of endless mischief in a fruit garden, and notwithstanding so much has been said and written, they will occasionally baffle almost every thing tried for their destruction. Like all other things depending on early attention, the insects that destroy fruit are rarely thought of until the period for doing mischief arrives. They have then got so far a-head, in respect to numbers, that the destruction of thousands hardly appears to lessen the evil. Bottles of sugar and water catch and kill myriads, and yet there seems to be as many as ever after weeks of this destroying operation. An author, of some experience, recommends all manner of traps at once. He says, "Bottles of sugar and beer, hanging on the trees, rotten fruit and arsenic in flat shallow vessels, at short distances, but out of the way of bees, (how is this to be managed?) poultry, or other domestic animals, and all other contrivances for killing should be resorted to." Granted, if it can be done safely. We have even seen bees caught with wasps in the bottles of stuff, and we fear that in the fruit season, although many wasps fall a sacrifice, bees also suffer in a large degree. We believe bottles of sugar and water, or sugar and beer, are attractive, and save fruit occasionally, but not always.

STRAWBERRIES.—The runners may be planted out a foot apart, in rows two feet apart, if they have not been so planted already. If the object is to make new beds or borders, these distances are right enough, but if it be only to make running plants, six inches apart every way would be enough. August is the proper month for this, but if it has not been done, better late than never. Get a few of the Alice Maude and Swainstone Strawberries to try; they are invaluable in some localities, especially where early fruit is an object, though, as a first-class Strawberry, in all its points, nothing has yet beaten Kean's seedling. Prince Albert and the British Queen have their admirers, and so has the Elton, which comes in later with Turner's; late therefore as it is to get runners, get a few of either of them that you have not got.

Pruning Trees.—In some seasons there are trees that can be pruned this month, but it is better deferred till October; the leaf should have fallen before anything violent is done with the knife.

Grafting.—Those who are inclined to try autumnal grafting may do it at the end of the present month, but we know of no object to be gained by it, unless it be this; if we can get scions of choice things now, and cannot get them in spring, it is worth trying, but the tree cannot be forwarder, or in better order, than it would be with spring grafting, and, unless it were to secure sorts that could not be got in spring, we should never think of it.

Vines.—Stop all the long shoots at the beginning of the month, it will strengthen the remaining portion. Look well to the grapes, and if any one be damaged by the wasps, cut it out, for it only affects others, and would cause the whole bunch to be sacrificed. Still thin out all the small grapes from those out of doors and unripe, leaving none but the best to ripen.

THE FUCHSIA—ITS HABIT AND CULTURE.

Whatever may be said of the flowers of the Fuchsia, the habit of the different varieties affords quite as great a contrast as the bloom; and the great mistake which the cultivators have made, according to our notions, is in cultivating them all alike. Fuchsia fulgens and corymbiflora, and all the varieties of their habit, are rank-growing plants, as coarse pretty nearly as a Dock, and flowering in bunches at the ends of all the shoots. To grow these plants as they naturally push, is to produce a large loose ugly plant, with patches of bloom here and there, at the ends of the coarse and vigorous shoots, and we can hardly conceive anything in worse taste; whereas the only truly effective mode of cultivating them is as standards, allowing the strong shoot to grow as hard as it likes, until it is as tall as you please, simply pinching out the lower shoots, and leaving only the few at top to grow. The lower ones from these to be still removed, as new ones form above them. When your plant has made as long a stem as you wish, pinch off the top, and encourage the side branches. When these side branches, of which there may be half a dozen, grow pretty strong, take the ends off them also, and encourage side or lateral branches out of them. If these make a pretty fair sized head, let them grow on till they flower, and the bloom will form pendulous tassels, seen with great effect under the head, and for a time they make a very imposing appearance. The bloom does not come in sufficient quantity to make a bush look well, without the whole thing being confused by the number of branches; for being naturally pendulous, they have every appearance of coarseness. There is, however, at the onset with all this class of Fuchsias,—(that is to say, those which bloom at the end of the branches; and, indeed, in the original species, as they are called, Corymbiflora and Fulgens,)—a total absence of one of the most essential properties—contrast between the sepals and corolla, and in good collections they are both excluded, except where seedlings are raised, and where, in too many instances, these very two spoil all the offspring. Now, the reverse occurs with some of the old ones. Globosa, and its varieties, are for the most part well constructed, though they could be ten times more valuable if the sepals reflexed; nevertheless, there are qualities which make them still favourites. The old Globosa is a dwarf plant, and grows well, and looks well as a bush, because the blooms come out all along the branches at the base of the leaves, and several at the base of each. This plant rarely wants anything but potting in good loam, decayed dung, and leaf mould in equal portions, and they will grow without trouble, flowering very small, and looking very handsome, because they grow naturally bushy; and the same may be said of some of the Globosa varieties, the main difference being in the size of the flowers and foliage, and more robust growth: the only real pruning they ever require being the stopping of any branch that is growing too vigorous for the rest of the plant, for laterals are thrown out in abundance without any check being given to the main stem. Indeed, there can hardly be said to be a main stem, so that there is no difficulty whatever in growing this class of Fuchsia. The general rule of shifting from one sized pot to another, is when the roots have reached the sides and began to work round them. Some plants are awkward in habit, and require a good deal of pains and some management. Venus victrix, for instance, has straight upright shoots, and will of itself grow very ugly; therefore, as soon as you have struck a cutting, you must pinch off the top so as to leave only two pair of leaves on it. These will throw out branches, and as soon as you can have two pair of leaves on each, pinch off the ends, to encourage further laterals from them, and continue this system until you find you have a nice bushy plant; all shoots that grow outwards may then be allowed to progress, while all that shoot directly upwards must be stopped at their third joint. The greatest difficulty with this plant is to keep it dwarf and bushy, for it naturally grows in long shoots upwards, and gets bare at the bottom. The plant, therefore, should be grown without heat, have plenty of air, and be only shifted from one pot to another when the present pot is full, that is, when the roots are growing round the sides. There are other plants which require no particular management, so far as pruning goes, because they grow naturally into a handsome pyrimidal form. Ricartoni for instance, and Formosa elegans, are of a handsome habit, and grow as symmetrical as a Fir-tree. The leading shoot must not be checked ; lateral shoots will come out strongest at the bottom ; and the taller the plant grows the more handsome it becomes. The blooms too come out at the base of all the leaves, so that the plant is literally covered, we were going to say, but as the blooms hang down it would be an improper term—loaded with flowers the entire length of the branches. All we have to guard against in the growing of Fuchsias is rapid vegetation ; they cannot be grown both fast and handsome; the one is incompatible with the other. If they grow rapidly, the leaves are distant, the stems more bare, the branches more lanky, and the whole plant poor. If they are grown moderately, without excitement, without heat, and not over potted, you have a plant rich with foliage and flower ; also, inasmuch as all the fine kinds of Fuchsia bloom abundantly in proportion as their leaves are abundant, the same number of leaves and flowers that might be straggling over a six-feet plant, will be found on one of three feet, and it wants no great wisdom to enable us to decide that the smaller plant is the better of the two. It has been the fashion to praise the gardener who could grow the largest plant in the smallest period of time: this was a sad perversion of skill. There is no more merit in growing a thing six feet high than one of three ; there is no gardener but is able to do it if size be his object. All this nonsense has pretty well passed away, for independent of the additional risk in keeping plants that have been greatly excited, they are not in the eyes even of persons unacquainted with gardening half so rich and beautiful in appearance, and a judge who knew his province could condemn the larger ones as unworthy the skill of a British gardener. We do not mean to say that there may not be cases where rapid growth is everything. In the case of new things there may be a great object in getting up plants to a saleable size, or in growing a plant fast for the sake of propagating it; but we unhesitatingly say, that to grow plants beautiful, and serviceable, and healthy, they must not be excited too much, and a slow, or at least a moderate growth, is indispensable. We have seen immense Fuchsias exhibited, and seen a written boast placed upon them that they were grown from cuttings since such a time ; and what have they been ? Why, the flowers a long away apart, the leaves scarce, the stem naked, at least comparatively so, the plant ugly and unsightly. The public have seen this, and the system is as soundly condemned by them as they used to be by us. It is not difficult to do this. A boy who has not served a year of his time could put a plant into a large pot and apply treatment for rapid growth, as easily as he could put it in a small one and shift it and keep it cool. Among the various habits of Fuchsias, none are better than those of a pyramidical form ; and we are disposed to prefer them, because, when well done, they are bushy and wide at the bottom, narrowing to the top, and flowering all over ; but if there be properties in a flower you must make the best of it. It is quite possible to have a plant too prolific of bloom, it is the fault of Chandleria, and to make this a proper object, though there are better flowers now coming on better plants, the blooms should be thinned as carefully as fruit. The buds will come as thick at the ends of the branches as a bunch of grapes, and the annoyance is, that the plant is never fairly in flower. The only way to grow and show this plant handsome, is to deprive it of two-thirds of the buds at the end while young, and especially of the smaller ones, for they are a complete eyesore, and by removing them the rest are thrown better into flower, and of a better colour. The idea of thinning blooms never seems to occur to any body, but it is as essential as thinning of fruit, and it improves those that remain more than an unpractised man can imagine. There are other plants in the same predicament, and especially all those that bloom in bunches at the ends of their branches ; but they cannot be made good, because the disposition to bloom thus renders the other part of the plant scanty. While upon the subject of habit and flower we ought once for all to insist that no self-coloured flower, or even approaching a self, can be esteemed ; if the outside be crimson, the corolla should be dark purple ; if the outside be pink, the purple may be lighter, but it would be better dark ; if the outside be pale or white, a dark crimson or scarlet corolla would be tolerable, but even then the less the corolla is like the sepals and tube the better. Again, the sepals should be all of a colour, not pale and darker, nor pale and green, though we do not mean in the present infant state of the flower to condemn all such, for there would be some among the condemned that would be sadly wanted; but we cannot admit that any possessing these characteristics are good show flowers, and we should assuredly turn them out as soon as we got better in the same way. We hold, too, that a globe-shaped flower is the form we require, no tube is wanted; and when the sepals have formed a globe close before opening, they should after opening reflex or turn back and form another globe with the inner surface of the petals outside. We ground all this upon the properties of bloom as already laid down by Glenny, and not on any notions of our own; for at first we began to doubt the propriety of any such arrangement, until we tried it by the test of experience, and the exercise of taste; and we, like others, are convinced it is right, and that nine out of every ten sent out, and advertized to be sent out, are positively a take in. At the exhibitions of the present year, and we have been to all of those in and near the metropolis, not one collection of Fuchsias in a dozen could boast of three good plants. Coarseness and sameness have predominated so much as to destroy all interest in the flower; and the sight of the Globosa, Formosa elegans, Lowerii, Ricartoni, or Venus vertrix with all its faults, has been quite a relief to the rough and ugly things that were spread about the tables. This is not as it should be, and we are quite sure the proper taste will prevail, and new flowers will be found more consonant with good judgment and refinement. Instead of having the Fuchsia a rough ill-looking ramping plant, with ugly brick-coloured flowers, or indefinite monsters, struggling between green and dirty whites or pinks, we shall have a law laid down by the Societies themselves, making it a condition that there shall be a contrast between the sepals and the corollas; and it would be well if judges were appointed who knew good from bad growth, for hitherto the Fuchsia has been very bad, and the judgment much worse.

A few rules for growing all kinds may be useful here, because the plant is now so distorted, that there is nothing like good sound growth to be seen. First, then, strike the cuttings, and in the preparation of these it has been usual to make every cutting have two eyes, one to be the base for the root to strike from, and one above ground to grow. It has, however, been asserted upon what we ought to call good authority, that the cuttings of Fuchsias, and of Camellias, will strike without a joint under ground, so that every eye will make a plant. Mr. Fairbain, of Peckham, late of the Wandsworth Road, was the originator of the practice with Camellias, and he struck hundreds not more than an inch long, the base of them not cut at a joint, but in the clean wood, of which he left an inch under the eye that was to grow; and from the base of this plain wood, without a joint near to it or at all under ground, come out its roots all round alike, and very freely, and rather quicker than those left with a joint at bottom. This is a most important communication made to us by a party who saw Mr. Fairbain practise it, and as it has been made public it is proper that it should be coupled with the name of its inventor. Mr. Fairbain has confirmed the fact with regard to Camellia Stocks; and so far as Fuchsias are concerned, it rests upon the original communicator, who said that, grounded on the practice of Mr. Fairbain with the Camellia, he had succeeded in the same way with the Fuchsia. There is no harm, therefore, in trying a few with only one joint, and that above the soil, by which means every piece fit for a cutting upon the old and safe plan, would make two upon the new one; try half a dozen, therefore, cut without a joint at bottom, but do not trust many, for we are very loth to recommend new fangled plans of doing things already done well; yet it is of such vast importance to double the number of plants that can be made from a new or scarce thing, that it is well worth the experiment; we are trying it at the moment we are writing, but the result cannot be known before this is in print. Place your cuttings pretty close together in a pot filled all but three quarters of an inch with compost, and the top three quarters of an inch with silver sand; stick your cuttings in so as to touch the soil but not go into it, cover them with a bell glass, whose edge shall go close into the sand, and subject them to slight bottom heat; in three or four weeks they will be struck. The bell glass should be wiped dry every morning inside, and the cuttings be well watered; when they are struck pot them into large sixties, (pots sixty to the cast,) and place them in a cold frame with a hard bottom to let the water run off, and keep worms out; let them be freely watered, but they require to be well drained with crocks inside the pot. The glasses may be kept close down the first twenty-four hours, after which they require air, and the glasses should not be ever closed; but in the very hottest of the day some light shading should be provided to keep the heat off, as in small pots it soon bakes the soil inside if exposed to the full glare. Yet, there must be no light taken away, or they will be drawn up weakly. They would do just as well put out of doors altogether as in frames, except that in frames they are so easily shaded; but, we have had them out of doors and put tulip irons or hoops over them, so that a covering could be speedily given. The best covering is a light calico, which is cheap, though it only lasts a season. In this way may the young plants be grown until the roots reach the sides of the pots and begin to work round them. In the mean time, however, you must, according to the habit of your plants, stop them to make them bushy, or let go on their own way. When shifted they should be potted in forty-eights, (pots forty-eight to the cast,) and placed again in the frame, watered and shaded as before, and their progress watched and regulated according to their habits, as directed in the early part of this article. It must be recollected that if the Fuchsia is kept soppy and wet, the leaves will drop, and if neglected and allowed to get dry the leaves will turn rusty and fall, so that care should be taken that the soil is moist, but that wet shall run away freely; and if any one looks wet while the others are dry, you must turn out the ball and look well to the drainage, for it is evidently faulty and the plant in danger, until the cause is removed. From this sized pot they should be turned into thirty-twos, (pots thirty-two to the cast,) and the same treatment persevered in further until the end of the summer. Many of the plants will bloom in fine order in their progress; and during their bloom, if they are wanted, they must be shaded from the sun altogether all the middle of the day, as it naturally affects their colour; on the other hand the shade must not take away all the air, for on their having a good supply of this much depends. During the entire winter they must be protected from frost by covering the frames, but they must not have heat nor much wet; they in fact grow but little in the winter advantageously, though they could be, and by many are, kept growing on. In the spring, when they start growing again, give them fresh pots a size larger, and treat them the same; suffer not the slightest frost to reach them, but give all the air you can in mild weather, and not too much wet, though they must not be neglected so as to dry up too much. This is not the rapid way of growing this plant, but it is the right way, and plants so grown will be a credit instead of a discredit to the gardener. Coarse minded people value size and ramping growth; not so people of taste. Here your plants will be compact, rich in foliage, handsome in form, and the flower of a good colour; whereas we must confess that of the hundreds we have seen this season, not a solitary plant have we observed that had not suffered in appearance from the foolish manner in which gardeners have been led to excite their plants. Roses have been suffering from the same cause, and not a decent plant, not one capable of holding its position without props sticking about it in all directions in the most ungardener-like way imaginable, have we seen. Indeed, the silly mode of judging things by their size, adopted at too many shows, and by too many societies, has all but destroyed the character of the Rose, the Geranium, the Fuchsia, and many green-house plants. A gardener, to follow the taste of the finicking judges of the day, has to become a carpenter—a mechanic, a sort of artificial flower-maker. Roses are produced and called standards when there are sloping sticks standing outwards all round like the ropes of a balloon, or the wires of an umbrella, and this is called gardening. Fuchsias are the same; great sprawling branches propped up into their places, and lanky limbs twisted and distorted to bring them into some shape, have distinguished all the shows as yet, and we are almost ashamed to say, that neither beauty nor usefulness enters for a moment into the heads of the gardeners who hope for prizes in the present day. It matters not, however, how soon some Society starts to give prizes for legitimate objects of gardening; the best and handsomest plants for use and beauty, fit to grace a conservatory or a drawing-room, and not to the wretched bird-cage looking things with bundles of laths sticking about them in all directions, which we see almost exclusively at the public shows. Fuchsias grown upon the plan we have laid down will year after year grow in size, and increase in beauty; but if the frost touch them the young wood will die black, and you must then carefully prune them, so that the new wood will come into form. The Fuchsia is, in this country, nearly deciduous; many persons lay them by in the winter to rest and give them no water; we should only lessen the allowance; but, inasmuch as the plants under this system are never excited, they want no rest but that which they will of themselves take. We have grown Fuchsias upon the shift and slow-growing principle for ten or eleven years, until they are at length in good sized tubs, and though we cannot put ten-feet trees in frames, they do well in an orangery, where neither heat nor cold annoys them; and they make noble objects on the lawn all summer-time.

It matters not at what period of the year you take cuttings; and if you please you may take them once a month, and have all the ages doing alike in the same pit, and subjected to the same treatment. As a contrast to the great ugly Brobdignag things, that please the vulgar taste of the present day, we should like to see prizes for the smallest plants that could be produced in perfection of flower. There would be some merit in hastening the bloom of a plant while it is small; there is not the least merit, not even the merit of a garden labourer, in producing large plants; anybody can use the means, a boy can give the required attention; and if he could lift the pots, we could find one (nay, a dozen or two) that would shame the gold-medal winners of the day. We do hope and trust that next season may produce us a few honest gardener-like plants, and that the public will force the

Societies to look to merit instead of monstrosity, for it is inconceiveably degrading to the profession of a gardener to force him to adopt the mountebank system of growing plants so that they cannot support themselves, and resorting to the most ridiculous contrivances which lower the productions at shows. The Fuchsias grown upon the plan we have here laid down, require no artificial support; they are firm, compact, handsome, and worthy of a far higher reward than the unmeaning, though somewhat substantial, prizes, which carry no weight, are evidence of no merit, and only tend to pervert taste.

Amaryllis (or Sprekelia) formossissima.

THE AMARYLLIS,

ITS VARIETIES AND CULTURE.

There is certainly no flower among all the favourites in cultivation that is so noble in appearance as this beautiful tribe, and few which afford so much diversity of form and colour. They are all bulbous-rooted, but there are hardy, half-hardy, and tender species, each beautiful in their way, and all amply repaying us for the trouble attendant upon their cultivation. There is the variety, or species, called A. formosissima, as common in the shops as Hyacinths and Narcissus, and sold almost as plentifully, known by its splendid crimson flowers, dwarf habit, and capacity for forcing; but handsome as this species is considered, and much as it is admired, it is almost the least showy and least valuable of the whole tribe. We hardly know whether to class these flowers according to their form, their size, their habit, or their mode of cultivation. As to their species and varieties, they have been so crossed and variegated as to almost defy us in that particular, for even Paxton and Lindley, in their Dictionary, wherein it is professed to give lists, enumerate sixty hybrids to between twenty and thirty imported kinds, and it is impossible to say how many even of those imported were distinct species. Upon the whole, therefore, it will perhaps be better that we divide them according to the treatment they require, beginning with the hardy, and from those proceeding to half-hardy, to green-house, and to stove varieties. There may be a little difference of opinion as to what are hardy, and what require protection, but we shall take the authority already alluded to, and begin with those considered hardy.

Amaryllis aulica, blooming a green and scarlet flower, in July, introduced from the Brazils, in the year 1810.

A. Belladonna, flowering red, in July, and said to be hybrid, raised in 1821.

A. Belladonna pallida, having a flesh-coloured bloom in August, introduced from the West Indies in 1712.

These are all that have been recognised in Lindley and Paxton's Botanical Dictionary as hardy, and in the confusion of names and the shifting of particular species out of one genus into another, it is difficult to know how far we should be right in mentioning, under the same genus, a hardy and useful little flower, known to us for many years as Amaryllis lutea, one which blooms in the autumn, indeed we may say the winter almost, and to be purchased at the nurseries reasonably by the hundred or thousand. Of course, if hardy means anything, it means that a plant will flourish in the open air; but the little bulb we allude to must stand first in that particular, for it not only stands all weathers, but grows and flowers in that season, when all other flowers leave off, that is to say, when light frosts cut them down. The cultivation of hardy bulbs is a very simple task; a well-drained border or bed is absolutely required to grow them in perfection, and then there is no difficulty; they may be planted and left to grow of themselves. The Amaryllis lutea has a good deal the effect of a large yellow Crocus, and is not ill-adapted for clumps or flower-beds in geometrical gardens, to show its golden blooms just as all other subjects decay. We have had them planted all over a Dutch or geometrical garden six inches deep, placed dwarf-growing Annuals, Panseys, or other subjects alternately, and then, while the whole concern was looking, or rather beginning to look, shabby, from the decay of their summer subjects, they were pulled up to make way for the shiny leaves and yellow flowers of this hardy little subject. The other kinds of the so-called hardy sorts we have grown with some of the Pancratiums, in the front border of a hot-house, and they have bloomed well, but whether they required the assistance which the situation afforded them we know not; generally speaking, they were left two or three years undisturbed, and then the offsets were removed, and the best bulbs were replanted in their old situations. The soil was rather light, from the introduction of peat among the loam, and leaf-mould, and the border was used for subjects deemed rather choice, and requiring to be well looked after. The next division we shall notice is that containing those requiring the protection of a green-house, and they are not only numerous, as will be seen by their names, but every year is adding wonderfully to the number of hybrid varieties.

Amaryllis amabilis, a hybrid variety, raised in 1822, has a variegated flower, which appears in June.

A. crispiflora, a hybrid variety, with a rich scarlet flower, which blooms in June, and was raised the same year.

A. delecta, raised at the same time, has a dark red flower, which appears in August, and is also a hybrid.

A. Forbesii is a fine species or variety, introduced from the Cape of Good Hope in 1823, and bears a purple and white flower in July.

A. Forbesii purpurea was introduced from the same place, and the same year, and blooms purple, in July.

A. formosissima, a species from North America, introduced 1758, blooming a dark red flower in July, but will force early.

A. glaucescens is a hybrid variety, raised in the year 1822, and flowers red in July.

A. Hoodii is a fine scarlet hybrid, which was raised in 1822, and flowers in the month of August.

A. ignescens, also a hybrid, raised in 1822, and blooms with a flame-coloured flower in June.

A. imperialis; a rich scarlet hybrid, raised in 1822, and flowers in August.

A. Johnsoni, otherwise *A spectabilis*, is a hybrid, raised in 1810, blooms with striped flowers in May.

A. macrantha, a hybrid variety, raised in the year 1822, and bearing a red flower in the month of August.

Amaryllis Belladonna.

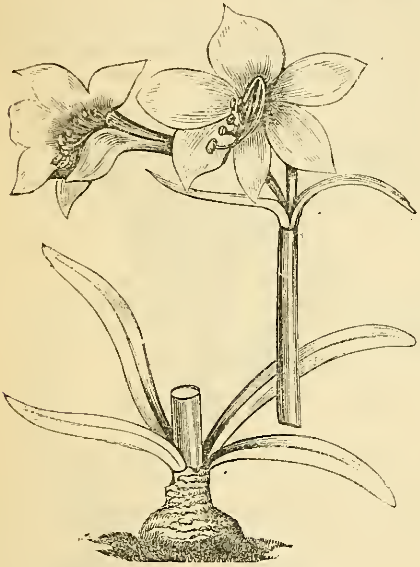
A. pudica, a species or variety imported from the Cape of Good Hope, in 1795, bearing a pink flower in June.

A. pulchra, a hybrid variety, raised in 1823, and blooming with a purple and white flower in June.

A. vittata, a species or variety introduced from the Cape of Good Hope in the year 1769, and blooming with a striped flower in the month of April.

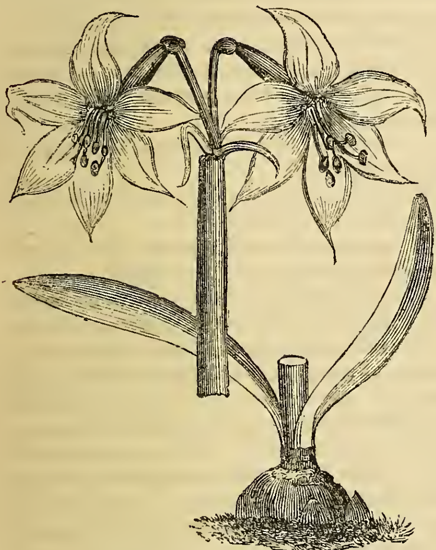
A. vittata major, a species or variety introduced from the Cape of Good Hope in 1774, and blooming with a larger striped flower in June.

Hundreds of hybrid varieties, which have not been honoured with names, and others which add to the most glorious confusion in which this tribe of plants seems doomed to luxuriate, might be added to the above; but, as a flower, very few are unworthy of a place, though there is abundant room to improve the whole race, and, as they advance, to throw out of cultivation all that are inferior. The form of the Amaryllis, as it is now best seen, is that of a funnel, some elongated, others shallow; the edge, however, being divided into six points. Some of the indentations are very deep, and cause the flower to look like six petals, very narrow and pointed. The fault of many hybrids is, that of partaking too much of the green texture of a leaf, as if the flower was not come to its colour; and thus an unfinished and almost worthless appearance is given to them. We have seen some of them almost green, with very small portions of colour of any other kind upon them; and these we should very soon discard. The culture of these green-house varieties is simple; the great condition required being to keep them growing fast when they are growing, and to let them absolutely rest, without water or any other stimulant, when the growth is completed; for, if they are continued moist when the leaf has grown to the full size, and thus kept from their natural rest, you will be disappointed in the bloom; a fate which has been very general among those who are not attentive to the condition of rest which plants, and especially bulbs, require to insure perfection. The soil in which the Amaryllis should be grown, when potted, may be formed of peat, loam and leaf-mould, in equal parts. This is generally light enough to let water through it freely; and if, from the quality of the loam and peat, it seems too stiff, the remedy is a little silver sand. Into this compost commit the bulbs; putting the lower half of the large part into the soil, and leaving the remainder of the bulb above it. Those so potted may be placed on a shelf in the darkest part of the house; no matter if, for the first few weeks, they are under the front shelf. They will probably show no bloom the first year; but this must not discourage you. They must have light and sun during their period of growth; and, when they appear to have grown their foliage to a full size, you may lessen the quantity of water by degrees, until, about August or September, they may be turned on their side, or put on the dryest shelf in the house, where their foliage will die down. Here some cultivators turn them out of their pots: we prefer their remaining in the soil; and, in the spring, if they have lain on their sides, they may be put upright, and, when they begin to indicate growth, which will be seen by the swelling of the throat, or narrow part of the bulb, they may be examined, to see whether the pots are full of roots, and, if so, may have a shift to one of larger size. Water them, to settle the compost about them, and put them into the warmest part of the house; attending now carefully to the continuance of moisture. Most of them will be found to have thrown up their sheath of bloom; and no further care, beyond that required for all plants, will be wanted until they flower. If you wish to seed them, let them have air, and plenty of it; if not, let them be removed wherever you require them to show their fine flowers. When any offsets appear, remove them at the time the leaf is decayed; that is, during the winter; and they may be planted two or three in a pot until they grow, or one in a small sixty-sized pot, to be shifted into larger as they advance. The seed of this favourite genus of plants is now frequently imported, and the mode of raising it is not difficult. The sowing of all imported seeds must depend on circumstances over which we have no control. It is impossible to calculate on when it was gathered, or how long it has been on its voyage. The ordinary advice, therefore, must be to sow it as soon as you can get it; for delay sometimes destroys the vitality of seed which, if sowed when first obtained, would germinate. The seed should be sown, in the kind of soil or loam already described, in shallow pans or boxes, well drained, and the seed covered very lightly with soil, and the whole covered with a hand-glass, or some other glass, besides being retained in the green-house. The boxes should be shaded, so that the seeds may not be parched-up, and a moderate moistness must be kept up all the time the young plants are growing. As they ought not to be sown too thick, they should not be disturbed all the season of growth; but, if in any part they are too close, take out a



Hippeastrum, or Amaryllis Pittacinum.

few carefully, to give the others room, and prick out those so removed, that they may have a chance of living. Those who are nice in such matters, and can depend on their seeds, place them, in the first instance, an inch apart all over the surface; so that they have the same room after coming up as if they were pricked out, and they grow all the better for not being disturbed. When the foliage has died down, they must have no water; and, as soon as the stuff they are in has perfectly dried, the young bulbs may be carefully taken out, to be replanted in other pans, and fresh compost, about two inches apart, or three or four in a pot; so that they may have the advantage of the next season's growth in plenty of room. Here they will swell into a size that can be handled well; and, being kept moist all the while they are growing, they will, until the tips of their leaves begin to look yellow, continue to increase in their size. From the time, however, that the leaf indicates decay, they must have no more water, and must be allowed to die down, and the soil to perfectly dry. They may then be put out into pots of large sixty or small forty-eight size, and one only in a pot. They require now the same treatment as the full-sized plants, until they bloom. The great object will be to throw away, or give away, all those of an indefinite colour,—all that are very deep or very narrow in their divisions; for it is useless to save anything worse than we have already. There may be some doubt occasionally, as to whether the seeds are of the green-house varieties or the stove. It may be remembered, however, that the green-house, and even the hardy varieties, will grow in the stove, although the stove kinds will not do well in a green-house. The Amaryllis forces as well as any flower we have. They must not, however, be put suddenly from a low to a high temperature. They should be placed first in the coolest part of the stove, and then after a while removed to the warmer. The Amaryllis formosissima may be brought forward, in the best condition, in a common hot-bed of dung. The roots may be had at any nursery, potted, as we have directed, one in a forty-eight-sized pot, and placed in a common cucumber or melon frame. They will produce their rich crimson blooms, in perfection, in a short time, and the same may be said of many other varieties; but the one in question is a sort of stock variety, approved by every body, and making a rich appearance among spring-forced flowers.


Hippeastrum, or Amaryllis Bulbulosum.

The stove varieties of the Amaryllis are numerous—more so than all others together; and, although many of the following are strikingly beautiful, there are many far superior that have been raised in private establishments, and not let out; therefore, to a majority of plant-growers wholly unknown:—

Amaryllis amœna, hybrid, red, blooming June, raised 1821.

A. atrorubens, hybrid, dark red, blooming August, raised 1821.

A. augusta, hybrid, scarlet, blooming December, raised 1822.

A. aulica platypetala, orange, blooming August, from Brazil, 1824.

A. campanulata, hybrid, purple and scarlet, blooming August, raised 1822.

A. canaliculata, hybrid, scarlet, blooming August, raised 1822.

A. coccinea, hybrid, scarlet, blooming August, raised 1821.

A. compacta, hybrid, red, blooming August, raised 1821.

A. consanguinea, hybrid, orange, blooming August, raised 1821.

A. costata, hybrid, striped, blooming August, raised 1821.

A. crocata, vermilion, blooming April, imported from Brazil 1815.

A. crocata regina, hybrid, scarlet, blooming May, raised 1810.

A. decora, hybrid, striped, blooming July, raised 1821.

A. discolor, hybrid, striped, blooming August, raised 1821.

A. equestris, scarlet, blooming August, imported from West Indies 1710.

A. equestris major, scarlet, blooming August, imported from West Indies 1710.

A. equestris plena, scarlet, blooming August, imported from West Indies 1809.

A. expansa, hybrid, dark red, blooming August, raised 1821.

A. *fulgida*, vermilion, blooming in April, imported from Brazil 1810.

A. *fulgida vittata*, hybrid, violet, blooming in April, raised 1820.

A. *grandiflora*, hybrid, striped, blooming in May, raised 1821.

A. *intermedia*, striped, blooming in August, imported from Brazil 1821.

A. *kermesina*, carmine, blooming June, imported from Brazil 1833.

A. *multistriata*, hybrid, striped, blooming August, raised 1822.

A. *nervifolia*, hybrid, purple and red, blooming August, raised 1821.

A. *pellescens*, purple and red, blooming July, imported from the Cape.

A. *patentissima*, hybrid, crimson, blooming in August, raised 1821.

A. *patens*, hybrid, purple, blooming August, raised 1821.

A. *phœnicea*, hybrid, purple, blooming in June, raised 1822.

A. *princeps*, hybrid, scarlet, blooming in August, raised 1822.

A. *principis*, scarlet, blooming in August, imported from Brazil 1830.

A. *psittacina*, green and scarlet, blooming in July, imported from Brazil 1816.

A. *punctata*, hybrid, pale red, blooming in August, raised 1822.

A. *purpurascens*, hybrid, purple, blooming in June, raised 1822.

A. *quadricolor*, hybrid, striped, blooming in August, raised 1822.

A. *recurvatæ*, hybrid, striped, blooming in May, raised 1822.

A. *recurviflora*, hybrid, red, blooming in August, raised 1822.

A. *reginæ*, scarlet, blooms in June, imported from America 1725.

A. *reginæ pulverulenta*, hybrid, scarlet, blooming in May, raised 1820.

A. *reginæ vittata*, hybrid, scarlet, blooming May, raised 1820.

A. *reticulata*, scarlet, blooming April, imported from Brazil 1777.

A. *retifloræ*, hybrid, scarlet, blooming in June, raised 1822.

A. *retinervia*, scarlet, blooming in May, imported from West Indies, 1822.

A. *ringens*, hybrid, red and white, blooming in August, raised 1821.

A. *rosea alba*, hybrid, red and white, blooming August, raised 1821.

A. *rubescens*, hybrid, red, blooming in April.

A. *rubicunda*, hybrid, red, blooming in June, raised 1823.

A. *rubro crocea*, hybrid, red and saffron, blooming August, raised 1822.

A. *rugosa*, hybrid, striped, blooming in May, raised 1821.

A. *rutila*, scarlet, blooming in April, imported from Brazil 1815.

A. *sexmaculata*, hybrid, copper colour, blooming in August, raised 1822.

A. *spathacea*, hybrid, red, blooming in August, raised 1821.

A. *splendens*, hybrid, scarlet, blooming in May, raised 1820.

A. *stenantha*, hybrid, red, blooming in April, raised 1821.

A. *striatiflora*, hybrid, striped, blooming in July, raised 1821.

A. *striatifolia*, purple, blooming in August, imported from the Brazils 1815.

A. *stylosa*, or A. *mazanensis*, red, blooming in April, imported from Maranham 1821.

A. *subbarbata*, scarlet, blooming in August, imported from the Brazils 1823.

A. *sulcata*, hybrid, striped, blooming in May, raised 1821.

A. *superba*, hybrid, striped, blooming in May, raised 1821.

A. *tortuliflora*, hybrid, scarlet, blooming in June, raised 1822.

A. *tortuosa*, hybrid, green and scarlet, blooming in August, raised 1822.

A. *undulæflora*, hybrid, purple and white, blooming in August, raised 1822.

A. *variabilis*, red and white, blooming in June, imported from the Cape of Good Hope, 1821.

A. *variegata*, hybrid, striped, blooming in June, raised 1821.

A. *versicolor*, hybrid, variegated, blooming in September, raised 1821.

A. *vittifera*, hybrid, striped, blooming in April, raised 1823.

Many others of this class may be named, but the above comprise nearly all the colours and styles of flowers, and where they appear in description, as in many cases they do, quite alike, a difference will be found in the size or form of the bloom. The stove culture is almost in all respects the same as the green-house, except in the matter of heat; and when the foliage has decayed, the plants may be placed in the coolest part of the house, or even in a green-house or out-house, or dry frame, until the time comes to provide for the winter. They are better kept in their pots, and when the time for growing comes round, let them be shifted into larger ones, and the dry mould may be shaken out, and the entire pot be filled with fresh compost, the same as that mentioned for the green-house varieties. The entire success depends on giving the bulbs their proper season of rest, by withholding all moisture from the time the leaves begin to decay, and not giving any until the season for starting them arrives. The Amaryllis is capable of being produced much more rich and beautiful in form than any that have yet been seen; for instance, the tube of the flower may be shortened, the trumpet mouth brought very much larger and more reflexed, the texture of the flower more rich and velvety, the points rounded, and the colour more dense. All this, however, must be done by perseverance and taste. The stove varieties may be used to cross the hardy or greenhouse kinds, and the principal concern should be to look well to form. The stove varieties produce seeds as well as any of the tribe, and the plan of crossing, already successfully employed in many places, can hardly fail to gratify the cultivators who propose to raise new varieties from seed.

The following notes, on the more recent divisions into which this family has been split, will be found instructive to those who go more into the botanical than the floral merits of these noble plants. They are furnished by an intelligent correspondent, to whom we are frequently indebted:—

DESCRIPTIVE NOTES OF SOME OF THE AMARYLLIDEÆ.

Modern botanists have found it necessary to separate the old genus Amaryllis into several, in order to draw up generic or family characters sufficiently clear and concise to serve for the purpose of botanical reference. The Hon. and Rev. W. Herbert, dean of Manchester, may be particularly mentioned, as having examined and studied, with great diligence and care, the plants included in the natural order Amaryllidaceæ, or that assemblage or group of plants, of which Amaryllis is at once the type, and furnishes the name; and his work on that order of plants presents a large mass of botanical information. The following are some of the most distinct and ornamental of these plants:—

Sprekelia is the name applied to that portion of the original family Amaryllis, of which the Jacobæan Lily (A. formosissima) is the type.

Sprekelia formosissima, (Jacobæan Lily.)—It is a splendid plant, with narrowish, long channelled leaves, and a flower stem bearing a single flower at the top, of six petals; the upper one reflexed, the two side ones spreading and reflexed, the three lower ones sloping downwards, with their base convolute; the whole forming a large flower of great beauty. The colour is rich crimson; native of Guatemala, in Mexico; flowers in May; about nine inches high. A hardy frame bulb.

Sprekelia glauca, (Glaucous-leaved Sprekelia.)—The flowers are smaller and paler than the last, and the leaves more glaucous. Native of Mexico.

Sprekelia cybister, (the Tumbler Sprekelia.)—The flowers of this plant are white, with pink lines; native of Bolivia; height, about one foot. There is a variety of this with a shorter flower, called, *S. cybister*, var. *brevis.* It is named the Tumbler, from the singular precipitation of the buds in their progress towards expansion, and in the final perpendicular position of the lower lip of the flower. Stove bulbs.

Hippeastrum includes many of the most showy plants usually known as Amaryllises. It is named from *hippeus*, a knight, and *astron*, a star, in allusion to the stripes of pale colour which occur at the base of each petal, together forming the resemblance of a star in the centre of the flowers.

Hippeastrum aulicum, (Crowned Hippeastrum.)—A very handsome bulb, with broad obtuse leaves and somewhat funnel-shaped flowers, formed of six broadly-ovate petals. They are rich crimson, with a green stripe in the centre of each petal, forming a star in the centre of the flower. Flowers in March, and often in the summer; about one foot and a half high; native of Brazil. There is a variety with broader petals, and another with more glaucous leaves. Stove bulbs.

Habranthus kermesinus.

Hippeastrum calyptratum, (Green-flowered Hippeastrum.)—This has green, narrow-petalled flowers, with faint red tesselated marks. Flowers in May and August; one foot and a half high; native of Brazil. Stove bulb.

Hippeastrum psittacinum, (Parrot-like Hippeastrum.)—The flowers of this species have broad, green petals, beautifully streaked and margined with bright red. Flowers in May and August; one foot and a half high; native of Brazil. Stove bulb.

Hippeastrum Solandriflorum, (Solandra-like Hippeastrum.)—The flowers of this are eight inches long; the colour green and yellowish white. Flowers in April; one and a half feet high; native of South America. The variety named *striatum* has the flowers faintly striped on the outside with red: *rubri-*

tuba has greenish white flowers and a red tube: *conspicuum* has the tube purplish red, and the other part of the flower faintly striped. Stove bulbs.

Hippeastrum ambiguum, (doubtful Hippeastrum.)— The variety *longiflorum* of this species has flowers eight inches long, white, with red stripes. Flowers in March; one foot high; native of Lima. A variety called *longiflora* has beautiful whitish flowers, streaked with red and green. Stove bulbs.

Hippeastrum breviflorum, (short-flowered Hippeastrum.)—This kind has short, nearly ovate petals, white, striped with red. Flowers in April; two feet high; native of Buenos Ayres. Stove bulb.

Hippeastrum vittatum, (superb Hippeastrum.)—The leaves of this species are broad, the flowers large and nearly six inches long, white, doubly striped with dull red. The variety *latifolium* has broader leaves, and flowers with more red, and a green star. Flowers in April; one and a half foot high; native of the Cape of Good Hope. Green-house bulbs.

Hippeastrum reticulatum, (netted-veined Hippeastrum.)—The flowers of this are purplish red, reticulated or veined with a deeper colour, and with a large white star in the centre. Flowers in March and April; one foot and a half high; native of Brazil. This has given rise to a very numerous progeny of hybrids, differing in the colour and form of the flower. Stove bulbs.

Hippeastrum equestre, (Barbadoes Lily.)—The flowers of this are bright orange, with a green star. Flowers in July; one foot high; native of Surinam, Trinidad, and the West Indies. The variety called *major* has larger flowers, and larger and more erect leaves; and the variety *semiplena* has the flowers semi-double. This last is found in Cuba, and in the Bahamas. Stove bulbs.

Hippeastrum stylosum, (the long-styled Hippeastrum.)—The flowers of this kind are dull coppery flesh colour, with a greenish tube. Flowers in May and June; one foot high; native of Maranham, and hence called *H. Maranense*. Stove bulb.

Hippeastrum regium, (Mexican Lily.)—This is a splendid species; the flowers are rich scarlet, with a green star, and are more funnel-shaped than some other kinds; flowers in May and June; two feet high; said to be a native of Mexico, but probably inhabiting some warmer place, perhaps Vera Cruz. It was named from having flowered first in England on the Queen's birthday, in 1728. Stove bulb.

Hippeastrum bulbulosum, (Bulb-forming Hippeastrum.)—This species has the peculiarity of forming little blind bulbs around the larger ones, which sometimes lie dormant for years. It inhabits the middle latitudes of Brazil. There are a number of varieties:—*subbarbatum* has deep orange flowers; *rutilum*, brilliant scarlet flowers; *fulgidum*, flowers larger and paler than rutilum; *Simsianum* (or *miniatum*) has red-lead coloured flowers; *acuminatum* has pale red flowers; and *pulverulentum*, deeper red flowers. They have all a cernuous or drooping tube, and the upper petal turns back. Stove bulbs.

The hybrid varieties, raised between the species of Hippeastrum, are almost without number, and differ chiefly in the form, size, or colour of the flowers.

Amaryllis, as at present restricted, contains but a very limited number of plants, compared with the popular ideas respecting it.

Amaryllis Belladonna, (the Belladonna Lily.)—This species is hardy, though requiring to be somewhat more under control than when in the open ground to cause it to flower freely; the leaves are strap-shaped; the flowers large, and funnel-shaped, flesh-coloured; flowers in July and September; two feet high; native of the Cape of Good Hope, and introduced and naturalized in Madeira.

Amaryllis blanda, (charming Amaryllis.)—The flowers are large, spreading, and recurved; colour, pink; flowers in May and June; one foot and a half high; native of the Cape of Good Hope. Green-house bulb.

Amaryllis Josephiniana, (Josephine's Amaryllis.)—The bulbs of this plant are sometimes imported of an immense size; the leaves are tongue-shaped; the flowers are scarlet, and very magnificent; flowers in June and August; one foot and a half high; native of the Cape of Good Hope. There is a variety with smaller flowers, called *minor*. Green-house bulbs.

Amaryllis Banksiana, (Sir Joseph Banks' Amaryllis.)—The flowers of this handsome species are large, and deep flesh-coloured or pink; flowers in August and September; two feet high; native of the Cape of Good Hope. Green-house bulb.

Habranthus is derived from *habros*, delicate, and *anthos*, a flower. It includes many of the smaller kinds, most of them of great beauty.

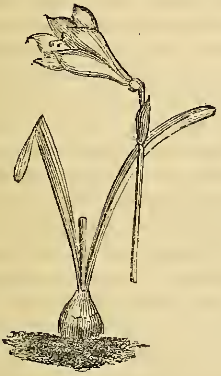
Habranthus phycelloides (Phycella-like Habranthus.)—The leaves are obtuse; the flowers yellow below, and scarlet above; flowers in September; one foot high; native of Chili. Green-house bulb.

Habranthus kermesinus, (carmine Habranthus.)—The leaves are linear, with an obtuse point; the flowers nearly erect, and funnel-shaped; colour, carmine; flowers in June; one foot high; native of Brazil, most probably South Brazil. Tender green-house bulb.

Habranthus intermedius, (intermediate Habranthus.)—The leaves are obtuse; the flowers red, greenish yellow below; flowers in September; one foot high; native of Brazil. Tender green-house bulb.

Habranthus angustus, (narrow-leaved Habranthus.)—The leaves narrow obtuse; the flowers purplish red; flowers in September; six inches high; native of Brazil. Tender green-house bulb.

Habranthus bifidus (two-cleft Habranthus.)—The leaves narrow; the flowers are pink, or purplish red, darker, and lined with green below; flowers in June; nine inches high; native of Buenos Ayres. The variety *littoralis*, with deep purple flowers, inhabits Monte Video. Green-house bulb.



Habranthus versicolor.

Habranthus Bagnoldianus, (Bagnold's Habranthus.)—The leaves obtuse; the flowers yellow, spotted with pale red; flowers in October; one foot high; native of Chili. Green-house bulb.

Habranthus roseus, (Rose-coloured Habranthus.)—The flowers of this kind are rose-coloured, green at the base; flowers in June; one foot high; native of the Island of Chiloe. Green-house bulb.

Habranthus gracilifolius, (Slender-leaved Habranthus.)—The leaves are very slender and cylindrical; the flowers are pale purple, with a green tube; flowers in September; nine inches high; native of South America. A variety, called *Boothianus*, has pink flowers. Frame bulb.

Habranthus versicolor, (Changeable Habranthus.)—The leaves are acute; the flowers are white, tinged with pink, tipped with red; flowers in September; nine inches high; native of South America. Frame bulb.

Habranthus robustus, (Robust Habranthus.)—The leaves are channelled; the flowers purplish pink, fading to white; flowers in June; one foot high; native of Buenos Ayres. Green-house bulb.

Habranthus pumilus, (Dwarf Habranthus.)—The leaves narrow; the flowers rose-coloured; flowers in June; six inches high; native of Chili. Green-house bulb.

Habranthus Andersonianus, (Anderson's Habranthus.)—The leaves narrow and acute; the flowers golden or copper-coloured, marked at the base with reddish brown; varies in the colour of the flower and breadth of the leaf; flowers in May; one foot high; native of Buenos Ayres and Monte Video. Green-house bulb.

Habranthus miniatus, (Vermilion-coloured Habranthus.)—The flowers are light red, flowers in July; one foot high; native of Valparaiso. *H. advena*, with red flowers, and *H. pallidus*, with pale yellow flowers, tinged with red, are supposed, with *H. miniatus*, to be varieties of one species, to which Mr. Herbert has applied the name of *H. Hesperius*, to imply that they inhabit the extreme West.

THE COWSLIP AND PRIMROSE.

The confusion which the Botanists contend is made by the Florists, in their determined efforts to raise new varieties, must be annoying, no doubt, to those who are constantly building their hopes on new species; but it is quite fitting that the only true gardener, the practical man, should oppose his art of knocking down species to the science of those who are as constantly making on paper what does not exist in the garden. Hundreds of plants called species are nothing more than varieties, and the instant the gardener can get hold of one that has a point of excellence, he forthwith uses it as the means of producing cross breeds, and succeeds to his heart's content. In the Phytologist* there is a curious paper, by Hewett C. Watson, bearing directly on this subject; and we extract it because it will lead to many curious experiments and singular results. There are some subjects which, as the Botanists instruct us, comprise many species, and a very large number of varieties; but when we see that the Florist brings them all into subjection, and produces varieties far more distinct from the parents than the parents are from each other, we are bound to look very suspiciously at the so-called species, and to suppose the possibility, if not insist on the probability, that the greater portion of species so called are nothing more than varieties. We remember to have seen, from a pinch of seed, Primroses, Polyanthuses, Cowslips, Oxlips, in all their leading single varieties and peculiarities. We had only the word of one person, who might have been careless, that all the seed was from one plant; but the following paper is more authentic than our own experience, inasmuch as we did not see the seed gathered, and could not of our own knowledge say positively that it was so: nevertheless we believed the party on whose authority it was stated to be so, and we look upon the following as a very confirmatory incident :—

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* The Phytologist; a Botanical Journal. London: John Van Voorst, Paternoster-row.

“THE COWSLIP AND PRIMROSE.

“While the botanists of this country were still imperfectly acquainted with the true Primula elatior (of Jacquin), and were applying that name to varieties of the Primula vulgaris, I called the attention of the Botanical Society to one of those varieties which differed from the ordinary form of P. vulgaris, not only by having the umbel of flowers raised above the leaves on an elongated scape (a variation of character not rare in P. vulgaris), but also by approaching nearer towards P. veris in the size and colour of its flowers, the pubescence and other characters. This is the variety which is entered in the London Catalogue, under the name of Primula vulgaris, *var.* intermedia, and which has been alluded to in the pages of the ‘Phytologist’ on different occasions (Phytol. i. pp. 9, 232, 1002), under the name of the ‘Claygate Oxlip.’ It has also been distributed by the Botanical Society, under the name of ‘Oxlip, No. 2,’ in contrast with other forms of Primulæ which are designated ‘Oxlips’ also.

“A wild root of this Claygate Oxlip was removed to my garden in the spring of 1841. Neither in that year, nor during the three succeeding years, did I observe any seedlings about the plant. In the summer of 1843, I saved some of the seed, all from the one plant, in order to ascertain whether it would germinate. This seed was sown in a flower-pot, in the spring of 1844, and kept well watered. Numerous plants thus raised, were removed to the open ground in the autumn of 1844. On the 2d of May, 1845, there were eighty-eight of these plants alive; seventy of them then being in flower. Several were in no wise distinguishable from the common primrose; some few were perfect cowslips; the greater number being intermediate varieties, which might fairly be said to connect the cowslips and primroses, step by step, so gradually did these varieties pass one to the other. On throwing them into groups, to correspond with the arrangement given in the ‘London Catalogue of British Plants,’ I obtained the following numerical results :—

True cowslips (Primula veris)	4
Cowslips passing to oxlips (Primula veris, *var.* major)	5
Oxlips (P. vulgaris, *var.* intermedia)	23
Caulescent primroses (P. vulgaris, *var.* caulescens)	18
True primroses (P. vulgaris)	20
Plants not bearing flowers	18
	88

“The Claygate Oxlip, the parent plant, was growing in my kitchen garden, in which neither cowslip nor primrose was grown in 1843. Nor was it easy to conceive the parent plant fertilized from either of the two species, unless through the agency of bees. Under the circumstances of the experiment, though not impossible, I think it highly improbable, that the seed of any other Primula than the one plant, could have been in the flower-pot. When the young plants were removed to the open ground, they were set in four different places, in order to try them in dissimilar soils and situations. Among those placed most in the shade there were no ‘cowslips,’ or ‘cowslips passing to oxlips.’ This circumstance might be attributable to the paucity of plants so placed: the cowslips bearing a small proportion among the plants placed more in the sun. The conclusion appears unavoidable to me, that a variety of the primrose gave origin at the same time to cowslips, to primroses, and to many varieties of these two reputed species. All the flowers had the colours of the wild cowslip or primrose, or intermediate tints; and in other respects, they kept to the characters of the wild plants, without sporting into the monstrosities of calyx or corolla, which are so frequently seen in the garden Primulæ.

“It will be observed of this experiment, that the first change from P. vulgaris was made (so to write) by the hand of Nature; the parent stock of my mixed assemblage having been a wild variety (as I suppose) of the primrose. In the experiment of the Rev. W. Herbert, somewhat similar results are said to have been produced by sowing the seeds of a ‘red cowslip,’—query, an oxlip? In recording his own experiment, it is stated by the Rev. J. S. Henslow that he sowed the seeds of ‘some cowslips’ which were growing in his garden, and that these produced varieties intermediate between the cowslip and primrose, with one ‘perfect primrose.’ Remarkably enough, no cowslip appears to have been produced from the seeds sown by Mr. Henslow; and I cannot avoid a still lingering doubt whether the seeds may not inadvertently have been taken from plants of the oxlip or caulescent primrose, instead of the cowslip. Moreover, it is now desirable to ascertain whether the ‘Westhoe’ oxlips are not referrible to the

Primula elatior of Jacquin, and equally so with the garden cowslips from which the seeds were collected. In the few following remarks, which naturally arise on these experiments, I assume the accuracy of my own experiment, as before reported; although a repetition of it is rendered desirable on account of the admitted possibility that a seed or seeds of another Primula could have been in the soil used in the flower pot. But whence the connecting series of varieties in that case?

"According to the technical idea of a species, which makes it embrace all individual examples which have (or might have) descended from a common progenitor, all my plants—whether cowslips, primroses, or varieties of either—must belong to one single species; and thus we fall back upon the Linnean notion of one 'Primula veris,' with its subordinate varieties of 'elatior' and 'acaulis.' This view will scarce find favour in the eyes of those botanists who labour under the 'species-splitting' monomania. The wild cowslip and primrose have well-marked characters for distinction, and characters which are usually very regular and constant. So far they are now dissimilar, and more constantly dissimilar, than are numerous pairs of 'book-species,' which are unhesitatingly received as really distinct in nature. Unite plants so dissimilar and so readily distinguished, as are the cowslip and primrose,—and what are we then to say about the frivolous attempts at species-making among the Rubi and Polygona in vogue at present, as among the Rosæ and Menthæ in former years?

"If we allow the cowslip and primrose to be two species, and yet allow that one can pass into the other, either directly or through the intermediate oxlip, we abandon the definition of species, as usually given, and fall into the transition-of-species theory, advocated in the 'Vestiges.'

"I do not see that we get more clear of the difficulty by assuming, without proof thereof, that the 'Claygate Oxlip' is a true example of hybridity. Do hybrids, if fertile, produce at once their own like, the like of each parent, and a progeny of intermediate likeness also? At best, the hybrid is only half of either species,—and can the half produce the whole? Such an event would assuredly not be 'like producing like' through an endless succession of descents?

"Let a few other cases be adduced, between reputed species equally dissimilar, and we shall be forced to recast our ideas and definition of the term 'species.' It would unavoidably become arbitrary and conventional; with no more exactness or constancy of application, than we can give to the terms 'genus' or 'order.'"

Hewett C. Watson.

THE CHIMNEY CAMPANULA.

(*Campanula pyramidalis.*)

Few plants are so beautiful when in perfection as this old-fashioned favourite. Often have we seen it with ten or a dozen long spikes of bloom spread out like the sticks of a fan, extending four or five feet in width, and forming that which its vulgar name implies, an ornament to hide a fire-place. Its botanical name, like thousands of other botanical names, is not very appropriate. Campanula pyramidalis implies that it grows like a pyramid, whereas the spikes being all long alike, or nearly so, form a spreading fan, if trained, and a spreading shrub, largest at top, if left to itself. This plant is of easy culture, but of late years, except in particular localities, it has been a good deal neglected. A plant is usually obtained, in the first instance, in a pot of the size forty-eight, in which it will grow for some time; but the first spring it should be shifted to a pot size twenty-four, in loam and dung, and that of equal portions. The draining must be very well secured by using crocks one-third up the pot. It may be placed upon the same stage as the carnation, or on a gravel walk, or other hard place; but, better than all, perhaps, to sink it will secure it against suffering so much if the watering be neglected. If the bloom rise, cut off the stems as soon as you can, and keep it growing right onward, which the removal of the blooms as they appear will greatly promote; by the end of the summer the pots will be full of roots, the plant a good deal spread, and much progress made. Now procure a pot, size sixteen, with half turfy loam, and half dung rotted to mould, and if it should appear stiffer than it should be to let water well through it, add a little silver sand to render it more porous. Into this pot shift the ball with a few crocks at the bottom, but do not disturb those already on the ball of earth from the other pot; place the plant rather deep in the pot than otherwise, that is to say, have the earth close up to the crown of the root or under parts of the lower leaves. In September or October, according to the weather, remove the plant into a common garden-frame, or pit, or if you have neither, have a hand-glass always ready to put over it at night, and to keep on in the daytime if there be frost; for though this plant is hardy in the open ground, except in extraordinary hard winters, it is more tender in a pot, from the danger of the fibres being frozen through the sides; not that it would be killed even then, but it would lose what you have been getting for it, great extra strength. It is quite as well to put it into the frame with the auriculas or carnations as any thing, and if you have no other means, take it into the dwelling-house for the purpose of wintering it. As soon as it is getting dry it must be moistened; for, although it ought not to be very wet, it should not be at any time distressed. In May it may be taken out of doors, and must have all the air, plenty of water, and sun; but if the water be neglected, and the fibres get dry next the pot, it will get a check which will require the whole season to get over. There will be a number of stems rise for bloom this time, and as the wind will not fail to break them if unsupported, the plant should be trained and fastened in some way to secure them from damage, and the only way to dispose of the stems to advantage, is to not let one branch touch another. Whether this is spread out like a fan, on a flat surface, or like the upright sticks in a basket all round the pot, is a matter of taste; but, if the branches be not so supported, there can be no perfection of growth and bloom. As these branches or spikes of bloom are growing fast, water with liquid manure, composed of a shovelful of sheep's dung in ten gallons of water stirred up and left to settle,—and give this about every fourth watering. The blooms will come fine, numerous, and large, and will repay you for the labour and trouble and losing one year's bloom. These plants may be shifted until they would literally fill a peck pot; but as soon as the bloom has begun to fade, and the plant ceases to be a fine subject, it may be once more shifted; a pot number twelve will be large enough. The branches or spikes must be cut down close, the ball of earth shifted without disturbing the fibres or the drainage, merely covering a piece of crock over the hole or each hole, and adding a few over the bottom; then put earth enough to keep up the surface of the ball of earth even with the edge of the pot. But it is as well at every shift to rub off a little of the surface, towards the side, so that you do not injure the fibres. The pot may stand in the open air till it is time to put it in a frame again, when it may undergo the winter treatment as before. While, however, the plant is out of doors after shifting, it must never be in want of water; the larger the plant is the less it ought to be checked, and drought is as bad as frost. In the spring following, the plant will be at its largest and best; perhaps twenty or thirty spikes of bloom may rise at the proper season, and this time you must remove all the weaker ones; for they would not only take away part of the strength from the best spikes, but they would also spoil the uniformity of the spikes. In the season the plant will make a splendid object, and cover an immense space.

PROPAGATION FROM THE PLANT.

This, like many other herbaceous plants, must be propagated by parting the roots or slipping off side shoots. These, if with roots to them, may be potted at once into forty-eight sized pots; and if with no roots, they must be struck under a handglass and potted as soon as they are struck. They should be kept in a frame the same as half-hardy things, or be planted out in sunny beds or borders where they are to bloom. As, however, they are chiefly grown as ornamental plants in pots, it is better to keep them in pots from the first, and change them from time to time to larger pots, and proceed as directed.

PROPAGATION FROM SEEDS.

Although there are many plants said to be very constant from seed, it will be always found that, however true they may seem, some will be more robust than others, some more dwarf or tall than others; so that, when a favourite plant is easily propagated from slips or parting of the root, few, if any, attempt raising from seed. Those, however, who are partial to new varieties, will do so, and therefore you must proceed, first, to save it by planting out a strong plant into a rich open border in the early part of the spring as soon as danger of frost is over, and well attend to the watering of it. When the flower-stems rise, cut away all but one or two, and fasten them loosely to a stake each, that they may not be confined, but may be supported against the wind. Continue watering all through its growth and bloom, and you will have plenty of seed. The lower seed-pods must be turning yellow before you pick off any, and then you may continue to pick them day by day as they turn yellow or brown. These may be laid by in the dry during the winter, and in May rub out the seeds and sow them thinly in boxes, pans, or pots, of loam, peat, and decomposed dung, and cover very lightly. See that they are kept moist, and as soon as they are large enough to handle well, they may be pricked out into pots four or five in a pot, or into a bed made up on purpose, in a sheltered situation. In the autumn, when they are pretty strong, you may select such as you like for pot-culture, or you may for the first year let them stand out, throwing a little loose litter over them by way of protection in case very severe frost should occur. When you see, from their habit of growth and flower, which you care to save, you may cut down the decaying flower-stem, pot them up into twenty-four sized pots, as the most convenient for keeping through the winter, or plant them out where you please, to permanently flower them.

COTTAGE GARDENING.

The science of Floriculture would afford much amusement if we could trace back its history better than we are now able, but in all the early Societies there was seldom any record of transactions; and one half the members could not even write or read writing. The enthusiasm was, however, complete; every cultivator thought more of his flowers than himself, and some were much more anxious about their gardens than their wives or children. However singular it may appear, nearly all our best early fancy flowers were raised by the silk-weavers who emigrated from France, and who followed up the flower-fancy, the bird-fancy, and the pigeon-fancy, with an earnestness bordering on monomania. One would think that pigeon-fancying was bird-fancying, but it was not so in the common acceptation of the word; they were distinct studies, although some of the florists added it to their fancy for flowers. It was not until late years that nurserymen troubled their heads about raising seedlings, and if we go back to the time of Miliken, who was pretty early in his cultivation and encouragement of florist's flowers, we shall find that his first book was written as if Floriculture was a new science, and surrounded with difficulties, while men, who could neither read nor write, had given him his practical knowledge. Those who look upon the thousands of houses which now cover the space that used to boast of the gaudy Tulip-beds of hundreds of working men, would scarcely think it possible to have made so great a change; but there are many small gardens, even now, in the Mile-end-road, with their canvass houses, which, in the season, look like an encampment, but which are doomed, at no short distance of time, to give place to brick and mortar dwellings, and its present occupants must be scattered far and wide, or give up the innocent and healthful pursuit of gardening. The distribution of the occupants of small gardens has been large, and for some years gradual; first, one giving place, then another, to the new buildings, which cover almost every once vacant space; and unless something be done to provide the mechanic with the means of indulging the practice of Floriculture, he will have recourse to the public-house and the skittle-ground, for less healthy amusements. Wherever the trade of weaving flourished, there also flourished the cultivation of flowers; so that, as the Spitalfields artisans were dispersed, they carried their favourite fancy with them, and hence we find the same love of flowers pervading that class in all our leading manufacturing towns. It is said that around Nottingham there are no less than five thousand plots of ground let out to the humble classes, who pursue, as heartily as ever, their amateur gardening. And here we may congratulate the higher classes on the habits of the multitude so employed. We mention Nottingham only because the number of gardens was communicated to us somewhat officially; but we are told that Manchester, Paisley, Birmingham, Derby, and many other places, would give us pretty nearly the same results in proportion to the number of individuals engaged in the manufactures of cotton, woollen, or silk ; for it would seem that Floriculture, like many other fancies, was communicated from one to another, until it appeared to be the leading amusement of the industrious classes. The fancy, from the first introduction, was kept up by shows among themselves ; a constant series of challenges, one flower against another, led to similar demonstrations in half-dozens and dozens ; from these, which were generally settled by judges appointed by the challengers, on Sunday mornings, in their own gardens, to each of which was attached a summer-house, they proceeded to establish clubs or Societies, to the funds of which they contributed weekly or monthly, so that, by the time the show-day came round, they had a fund for prizes, and enough for a feast on the day of show, which was generally appointed a few weeks beforehand, according to the prospects of the season, and they looked forward to it as a grand holiday at all times. The establishment of Horticultural Societies, which awarded prizes to cottagers, put another face on matters, and turned the thoughts of a very large class from flowers to vegetables, and we have read some very pungent remarks on the propriety of keeping such prizes for vegetables only, as flowers, being their natural taste, required no encouragement, while the devotion of their time to vegetables, which increased the comforts, and even afforded luxuries which the lower classes never indulged in before, was worthy of being promoted by every means. Then again, the flowers selected by these general Horticultural Societies for encouragement, were not, in one half the cases, the same as the humbler classes took delight in. The offering of prizes was, in fact, an evil, as it turned their thoughts from the Auricula, the Tulip, the Carnation, Piccotee, Pink, and what are called florist's flowers, to things of no importance but that to which the offer of a prize raised it ; and the folly of this species of interference actually knew no bounds. Imagine a Society of sensible persons, in other respects, offering a cottager, with a few rods of ground, prizes for Fuchsias, Geraniums, and other subjects requiring glass! One feels almost inclined to blush for the indiscreet appropriation of their own funds and the cottager's time. What could such proceedings lead to? First, it divided the attention of the cottager between the useful and the useless; next, it set them trying to do that which it was wholly beyond their means to do properly; and lastly, it led to the production of plants infinitely worse than the nurserymen were selling at a mere trifle; or it tempted the cottager to buy, ready done to his hand, what would be paid for twice over by the prize it would gain. We have seen at the country shows, prizes of from 6*d.* to 2*s.* 6*d.* given for the best Balsam, the best Cockscomb, the best Fuchsia, or the best Geranium, when the best would be the most contemptible object that could be imagined. How else could it be? What chance has a man, without a foot of glass, to produce, in good order, plants which require it? Why, the man who had the means of begging, borrowing, or stealing a plant, would grow it in his cottage window as the only place he had; and by the time the season came round three or four threepenny pots from a nursery would beat him; yet he was engaged in this memorable pursuit by the gentlemen who managed the Horticultural Society in his neighbourhood. This is now rapidly passing away: it has been effectually written down; and Horticultural Society managers are beginning to see that it is their duty to encourage the useful only, because flowers afford amusement, and are sure to be cultivated to as great an extent as will supply the grower with pleasure, while the prizes incite him to pay the highest regard to the vegetables which supply his family. Potatoes are worthy of the very first consideration—they are almost the staff of life. Carrots and turnips are, in their way, highly nutritious and favourite vegetables. Cabbages are of immense consequence, and where the cottager supplies all these well, his family can live better than where they have to be purchased, or are altogether absent. In proportion, therefore, as the use and importance of a thing recommend it, so ought Societies to encourage it. Potatoes ought to be produced in quantities by all cottagers, and there are never half enough prizes given for them, and others in proportion to their usefulness. Floriculture does not give way under such management; the cottager will have his rose, his jasmine, or honeysuckle up the front of his house, just the same as when there was no Society at all. He will have his rose-bushes as well as his gooseberry-bushes. You find his garden nearest the house boasts its ten-week Stocks, Pinks, Pansies; his Carnations and his Piccotees growing in their natural and beautiful state, far more beautiful than when patched round with papers and extinguished by shades. He will have two or three striking colours of Dahlias, without distorting them with flower-pots covering the blooms, and bundles of stakes, surrounding the foliage. He has them because he loves them; the only effect of offering him prizes for them would be that of inducing him to waste much more valuable time over them to render them showable on a table, than they would require to make them beautiful in a garden. But the original fanciers of flowers here, the silk-weavers of Spitalfields, shone chiefly, because each man devoted his attention to such flower or flowers only as he could manage well. He who loved Tulips cultivated the Carnation, because the same stage answers for both flowers. He who cultivated the Ranunculus for June, grew the Auricula for April; and hundreds only attempted one flower, so that their attention was undivided, and thousands of good collections have been grown in gardens comprising less than two available rods of ground. Everywhere small plots are now denied the artisans near London—every place near the skirts of a town is occupied with new houses, which are not allowed to boast of a garden, and the only chances for the multitude are those which may turn up out of the allotment system, and even that is only useful to its locality in any very great degree, because distant residents have so far to walk, that the greater part of their over-time from business, instead of being applied to the garden, is necessarily applied to the journeys to and from. Nevertheless, it is one of the greatest boons to a neighbourhood to find gardens for the poor; and next to having it at their own house, to have it found at all is a blessing; for, as a general maxim, the further it is removed from the house the rougher must be the crops, and the less chance there is of excellency in flowers. Cottage or allotment gardening of the present day ought to be encouraged by appropriating prizes, with great care, to the most useful subjects, and making the number a little proportionate to the number capable of showing them. Thus every cottager could exhibit potatoes, because if they had only half a rod of ground this could be done, and, for their own interests, and that of their families, this should be done. This calls upon Horticultural Societies for numerous prizes, and the gradation of the amounts should be pretty even. The first prize for potatoes, which should be shown in two classes, kidneys and round ones, should be half-a-crown, but the next should be two shillings and threepence, and the next two shillings, and so reduce threepence each time till they come to sixpence, and that should be given to every one that was worthy,—that is to say, to every one whose produce was of creditable growth. Those only should go without prizes whose produce was not of creditable growth, because it would be no encouragement to the good if the bad were to be rewarded at all. A prize is a prize, however small, and none should be given for anything below an average fine growth. Let this one case be taken as a lesson for others. If only one-half the number could, from particularly adverse circumstances, grow cabbages, let the prizes be only proportionate; but we feel quite assured that the more prizes there were the more shewers there would be. One great point must be attended to, and that is, allowing no one to take two prizes on one class. It is quite clear that the more there are shown, the more interesting the exhibition becomes; but let cottagers, besides showing their productions for prizes, be allowed to put up as many with their names attached to them as they please, but not for competition. The present state of Cottage Gardening requires immediate attention, and the more that the higher classes look into the good that has been done, under every disadvantage, the more will they see the necessity of patronizing it judiciously, and of not diverting the attention of the owners from the raising and cultivating useful vegetables.

THE NOTE BOOK OF A NATURALIST.*

This volume is particularly acceptable in the present day, because there is an originality in the treatment of a very familiar subject. There is no vast attempt at method—indeed the title indicates nothing of the kind; it is precisely what we should look for, a sort of *ad captandum* journal of all kinds of facts, packed up in all sorts of ways, and in all kinds of places. The author does not insist upon his readers learning the science to follow natural history, and his work is of a nature to entertain persons who know nothing of the matter. He says truly enough, "There are many practical and zealous florists, who are ignorant of even the elements of botany" (he might have said also many finished botanists who are ignorant of the first principles of practical floriculture); "and there are equally as many ardent followers of natural history, who derive both amusement and instruction from its pursuit, without cultivating it as a science. The knowledge of the various genera, their classification, their habits, the period of their appearance, is, whether applied to ornithology or entomology, no slight task." He is quite right. We go still further; we say, however much the science of botany or of natural history may afford delight to those who are fond of it, a man may be profoundly ignorant of both, and yet greatly excel in the practical knowledge of the habits, character, and functions of plants and animals. Let us select a few passages from the author, by way of illustrating the fact, that a man may receive great delight from practical observation of the subject of natural history, in animals, as well as great delight in the culture of plants. He says—

"A skilful naturalist has been able to perceive that in the body of the lowest caterpillar, which in the common opinion is one of the most degraded existences on earth, there are upwards of two thousand muscles, all of which can be brought into action with as much facility, at the will of that insect, and perform their several offices with as much accuracy, promptitude, and precision, as the most perfect animal. It would be no easy matter to make some men believe that the most minute insect, whose whole life may be calculated for only the duration of a few hours, is, in all parts, for the functions it has to perform, as complete as the majestic elephant, which treads the forests of India for a century. Little do they suppose, that, even in its appearance under the greatest magnifying powers, it is as elegant in every respect, and as beautifully finished, as any of the larger animals. Unlike the paltry productions of man, all the minute parts of these works of God appear in greater perfection, and afford to us a greater degree of admiration, the more minutely and accurately they are examined. M. de Lisle saw, with a microscope, a very small insect, that in one second of time advanced three inches, taking five hundred and forty steps, and many of the discoveries of Leuwenheck were even still more wonderful than this."

There is nothing here that a man may not contemplate with delight, without knowing the name of the creature he is examining. The Essay on Natural History, which precedes the general matter, is much to the point, although there is some occasional borrowing from familiar authors. We then have a chapter on the Physiognomy and Character of animals, another on the Migration of Birds. A chapter on the Robin, relating two or three incidents, for the book, as its title imports, is full of them, and connected with all subjects. The hybernation of animals, the passion of animals, the animal world, and instinct of dogs, are subjects successively treated of, and illustrated by anecdotes and occurrences, related in plain and simple, but very intelligible style. Among the miscellaneous matter, we find the following, which is curious:—

"The delicate pink spots on turkeys' eggs will wash off when the egg is fresh and warm.

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* The Note Book of a Naturalist. By E. P. Thompson. London: Smith, Elder and Co., 65, Cornhill.

When a schoolboy in Germany, I found it impossible, from the veneration and scruples of the villagers, to rob a stork's nest for a zoological friend, who wanted a couple of eggs for his collection. The turkey's egg is of about the same size and form ; therefore, rather than disappoint him, I availed myself of this knowledge to practise a mischievous hoax upon him, which I have often since repented, as he attached much importance to his acquisition."

"The scarcity of many of the varieties of the sphingidæ may be attributed in some degree to the great destruction which attends them in their pupal state. Burying themselves beneath the ground, to undergo that change in their existence before they emerge in their perfect state, they fall victims to the prejudice and ignorance of the working-classes, who consider them as 'maggots.' Knowing of the existence of some of the Sphinx atropos in a particular potato field, from the larvæ having been seen in it, I particularly enjoined the labourers, when digging up the crop, to save for me "the large brown maggots." They collected some six or eight, and assured me that they had often found them abundantly, and crushed them.

"In the autumn of 1843 (September,) I was looking on at a man cutting down the grass on the borders of the Basingstoke canal, and before I was aware of it, he trod under foot a beautiful larva of the Sphinx elpenor, which he declared and believed to be a slow worm, to which indeed it bears a slight resemblance. By watching and offering him a small reward, I succeeded in obtaining two other specimens, probably the only remaining ones, as the man told me he had killed several others. The privet moth is the most common of the sphingidæ, because it is less exposed to destruction. It feeds in its caterpillar state on the leaves of the shrub from which it takes its name ; and goes beneath the ground at or near the root of the shrub, which ground being rarely or never disturbed, the insect passes through its several transformations in security. They are also less liable to be trodden under foot as larvæ, like others of the family which feed on low and graminous plants.

"In fir woods, where the surface of the ground is clear and divested of underwood, a great quantity of pupæ of some of the rarest lepidopteræ, besides coleopterous insects in a state of hybernation, may be found in the winter by peeling up the moss which covers the ground. I pursued this system with great success, in the large fir woods in the neighbourhood of Frankfort, collecting thus many specimens which I had never before met with, and particularly some of the rarer cerambycidæ and the Sphinx pinastri. The pupæ of all the lepidoptera which I found came forth indiscriminately throughout the winter, from the great heat of the rooms.

"The readiest way to ascertain the presence of a caterpillar (particularly of sphingidæ) on any shrub or plant, is to look out for their castings on the ground, and the larvæ may then be easily detected."

Of reading like this there is abundance, and the volume is, to all intents and purposes, all it pretends to be,—the Note Book of a Naturalist, and an observing one.

THE EFFICACY OF TRENCHING.

It has been often objected, that if the subsoil of a garden is hungry, poor stuff, it ought not to be brought to the top by trenching ; but few greater mistakes are made than that of leaving a bad subsoil undisturbed. It is perhaps the worst possible advice to give in some cases, if by trenching the gardener will only understand the ordinary process of putting the top spit of good soil at the bottom, and bringing up the bottom spit of bad soil to the top ; but the quality of the top and bottom soil ought to decide how the trenching is to be performed. For instance, let us take the worst possible state of ground for the trenching operation—bad, poor, sour soil, which in its present state will grow nothing well. A little of it might be brought to the top every time the earth is dug, because exposing even bad soil to the atmosphere will improve it ; and if good ground reached only ten or a dozen inches down, this, when we begin to dig, must be removed one trench wide for the first operation, for the purpose of filling in the last left trench. This being removed for a start, in ordinary digging, the next spit dug all along would fill it up, and the ground would be merely turned over ; but before we go at the second spit, it would be wise to dig up the bottom and leave it there ; for next to bringing it to the top, loosening it at the bottom is best ; but taking out about two inches, to put on the top of the good soil will be found an excellent mode of improving the ground permanently. Then dig the second spit along the space to be trenched, and throw it into the trench ; loosen the bottom again, and throw two inches of the stuff on the top of the good soil ; continue this all through, one trench after another, until it is all finished, and the result will be, that this small quantity of worthless stuff will become, by the dressing and the exposure, workable and useful. In time two more inches might be brought up, and when it had become well mixed and amalgamated with the better soil, and the dung which is from time to time put on it, the soil which has been for years called shallow and unprofitable, will be far better than the owner could anticipate. In gravelly soil the ground would soon become stony, but excellent produce will come off stony ground; and by picking the largest off from time to time, even the gravel brought up will be anything but unprofitable in the culture. The worse the ground is in its subsoil, the less must be brought up from time to time; but whether clay, gravel, or chalk, attention to these matters will be repaid by a deeper cultivatible soil; and by proper dressings according to its nature, additional produce will be obtained. In a hot border seated on gravel, and from its extreme thin coating no doubt greatly robbed, we once made the gardener dig in the way we have mentioned, and throw up some of the gravel. By dint of high dressing we had fine crops of vegetables; and in the course of four years, instead of seven or eight inches, which was the extent the spade would go, we had a workable soil, stony it is true, more than a good spade would reach at once; and by removing the largest of the gravel stones from time to time, we had as useful a border as any of our neighbours. The greatest inconvenience we suffered, was in the rapid absorption of water, and the consequent loss of manure; but even this was got over by top dressing, instead of digging in; by which means it had to work into the roots, instead of, as at first, when it was dug in, work into the ground below them. We do not admire shallow soils, and hungry, unprofitable subsoils; but we are quite sure the ground is improved by bringing up a little of it every time it is dug or trenched, and by dressing it according to its nature. In the first instance, a good strong workman could bring up enough by common digging; but a great deal of good is done by loosening the bottom, and this can only be done by trenching, or what is called by the gardeners bastard trenching; and we strongly recommend all who have such soils, to try the experiment on a few rods; for they will not be long before they carry the operation through all their ground.

THE MANAGEMENT OF MELON-SHAPED CACTI.

The old notions about the necessity of growing this interesting tribe of plants in brick rubbish or poor soil has, of late years, been exploded by the number of experiments which have been tried by the numerous growers, who, having no particular directions for their culture, have taken their own means of advancing their growth. For instance, when Hungerford Market, some years ago, was the scene of barter and sale of endless varieties, brought by some foreigners from the Brazils and South America, they were lotted in quantities comprising many different kinds; and these lots were picked up by young and old cultivators, who treated them all manner of ways; and I happened to see the culture of four different individuals, three of whom comparatively failed, while the fourth succeeded beyond all my expectations. The three who failed, by comparison, potted their novelties in the poor soil, composed of brick rubbish and other matter, void of what is called richness or manure of any kind, and planted them in different positions; the one using a conservatory, which, having occasionally stove plants in it, was kept up to a temperature of what would be called a warm green-house; two others treated the strangers as subjects which required a constant eye, and so used their propagating houses. The fourth potted them in rich compost; that is to say, the loam from rotted turfs, and melon-bed dung turned to mould, in equal quantities, and placed them at once into bottom heat, in a regular stove. Here they started into rapid growth, and were kept moist. In less than one year they had nearly doubled their size, while none of the other three had made much progress, and had lost several. Seed which were found active in two or three of the species were sown at the time the old plants were potted, and treated in the same way, with bottom heat, rich compost, and stove temperature. At the resting season, the old ones were placed on shelves, and watered no more. When they indicated fresh growth, they were repotted in larger-sized pots, and the roots were found, on their removal, to have filled the originals. These were again placed in bottom heat,—that is to say, plunged into the tan which had been made up for pines,—and again grew rapidly, under the same management as before. With this treatment, they soon made handsome specimens, and were dispersed among collectors at high prices. Some other specimens, belonging to the other growers, were even the third season in their original pots, and had made as little, and in some cases not so much, progress as those under stove treatment had in the first. With some difficulty, one of the three parties was induced to adopt stove treatment, to shake out the old poor stuff, and put them into better, following, under advice, the successful treatment spoken of; and they advanced more in six weeks, or two months, than they had in the three seasons altogether. Nor were there any exceptions; but the two or three specimens (duplicates of some parted with) left in the hands of the original stove-cultivator continued, of course, wonderfully in advance of the others, keeping the head fully. From these facts, I come to the following conclusions: First, that it is erroneous to suppose a Cactus requires poor soil; secondly, that the popular notions that they require little or no water only applies to two or three months in the whole year; thirdly, that, with heat and moisture corresponding, they can be grown almost as rapidly as any plant. It does not form part of this paper to go into the treatment of all Cacti; but I am quite sure they do better for heat and moisture and rich soil, while they are growing, and for the absence of moisture, when resting. The seedlings before mentioned were shifted from four or five in a pot to one in a thumb-pot, from that to a sixty, and successively to forty-eight and twenty-four, looking healthy and clean, in which state they were when I last saw them. I do not pretend that all melon-shaped Cacti (as they are called, but meaning the short kind) would succeed; but I have no doubt that all South American Cacti would, and upon that principle would I recommend everybody to grow them, whether old plants or from seed. I have never inquired how the Rev. Theodore Williams grows his grand collection, but I believe his Cacti-house, from all I have heard, to be one of the most beautiful exhibitions of this numerous family in the United Kingdom, if not in Europe, and to comprise specimens from all parts of the known world. B. S.

THE FRUIT TREES OF AMERICA.*

THAT Horticulture is going ahead in America, there can be no doubt; and although many of their publications are almost echoes of our own works, there are some circumstances connected with their local tastes, habits, and notions, as well as in the fruits and plants of their own raising, which gives an interest even to the most humble of their periodicals. There is an overweening partiality for their own productions which pervades all they write; but this must be allowed, for, in our estimate of what we are reading about, and among those not very well acquainted with a subject, there is a disposition to praise the bridge that carries them over safe. Thus, if they are going to make free with an English book, they begin by praising the author; and a few American compliments, laid on with a trowel, are considered the *quid pro quo* for almost reprinting an English work; the acknowledgment of these great obligations being made in the preface, which very few people read, so that nine out of ten who read the work think the transatlantic author a very clever fellow, though what he does of himself is generally the worst part about it. Such has been the character of much that has appeared in America; and if we were to give a descriptive list of their fruits, by one of their own nurserymen, we should have to caution our readers against believing too much, as they would deplore the inferiority of our own varieties. In the midst of the false lights in which things are made to appear, the present volume is of great service. We do not engage to believe all the author says, nor shall we be expected to draw the same conclusion even from admitted facts. He has relied more on others than himself, as regards the improvement of fruits; nevertheless, the following, though not new, is in point, and forms part of the introduction to the subject of raising new sorts of fruit:—

"In the wild state, every genus of trees consists of one or more *species*, or strongly marked individual sorts; as, for example, the white birch and the black birch; or, to confine ourselves more strictly to the matter in hand, the different species of cherry, the wild or bird cherry, the sour cherry, the mazzard cherry, &c. These *species, in their natural state*, exactly reproduce themselves; to use a common phrase, they 'come the same' from seed. This they have done for centuries, and doubtless will do for ever, so long as they exist under natural circumstances only.

"On the other hand, suppose we select one of these *species* of fruit-trees, and adopt it into our gardens. So long as we cultivate that individual tree, or any part of it, in the shape of sucker, graft, or bud, its nature will not be materially altered. It may, indeed, through cultivation, be stimulated into a more luxuriant growth; it will probably produce larger leaves and fruit; but we shall neither alter its fruit in texture, colour, or taste. It will always be identically the same.

"*The process of amelioration begins with a new generation, and by sowing the seeds.* Some species of tree, indeed, seem to refuse to yield their wild nature, never producing any variation by seed; but all fruit-trees, and many others, are easily *domesticated*, and more readily take the impress of culture.

"If we sow a quantity of seed in garden soil of the common black mazzard cherry, (*Cerasus avium,*) we shall find that, in the leaves and habit of growth, many of the seedlings do not entirely resemble the original species. When they come into bearing, it is probable we shall also find as great a diversity in the size, colour, and flavour of the fruit. Each of these individual plants, differing from the original type, (the mazzard,) constitutes a new *variety;* though only a few, perhaps only one, may be superior to the original species.

"It is worthy of remark, that exactly in proportion as this reproduction is frequently repeated, is the change to a great variety of forms, or new sorts, increased. It is likely, indeed, that to gather the seeds from a wild mazzard in the woods, the instances of departure from the form of the original species would be very few: while if gathered from a garden tree, itself some time cultivated, or several removes from a wild state, though still a mazzard, the seedlings will show great variety of character.

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* The Fruits and Fruit Trees of America. By A. J. Downing. 1 vol. 8vo. London: Wiley and Putnam.

"Once in the possession of a *variety*, which has *moved out* of the natural into a more domesticated form, we have in our hands the best material for the improving process. The fixed original habit of the species is broken in upon, and this variety which we have created has always afterwards some tendency to make further departures from the original form. It is true that all or most of its seedlings will still retain a likeness to the parent, but a few will differ in some respects; and it is by seizing upon those which show symptoms of variation, that the improver of vegetable races founds his hopes.

"We have said that it is a part of the character of a species to produce the same from seed. This characteristic is retained even where the *sport* (as gardeners term it) into numberless varieties is greatest. Thus, to return to cherries, the Kentish or common pie-cherry is one species, and the small black mazzard another; and although a great number of varieties of each of these species have been produced, yet there is always the likeness of the species retained. From the first we may have the large and rich Mayduke, and from the last the sweet and luscious Black-Hearts; but a glance will show us that the duke cherries retain the distinct dark foliage, and, in the fruit, something of the same flavour, shape, and colour of the original species; and the heart cherries the broad leaves and lofty growth of the mazzard. So, too, the currant and gooseberry are different species of the same genus; but though the English gooseberry growers have raised thousands of new varieties of this fruit, and shown them as large as hen's eggs, and of every variety of form and colour, yet their efforts with the gooseberry have not produced anything resembling the common currant."—Pp. 3, 4.

There is a good deal to do yet about settling the genera of plants; much of what has been done is arbitrary. By and bye we shall have this genus split as hundreds have been before, without half so much excuse for the division. We all know that the seeds of worked varieties of trees will produce very different trees, and those trees very different fruit from the parent. Those who have cultivated seedlings of any kind long, find the natural tendency of all plants to get back to their wild state; and in many cases very few indeed come better, while a great number are worse than the parent. It has struck some novices as a most extraordinary fact that the berries of variegated holly produce only the green, and the yellow berries of some hollies produce nearly all with the common red. We have seen this frequently. The author of the book under notice endeavours to place the subject of non-production of the parent sort in some kind of light: he says,—

"Our American farmers, who raise a number of kinds of Indian corn, very well know that, if they wish to keep the sorts distinct, they must grow them in different fields. Without this precaution, they find, on planting the seeds produced on the yellow corn plants, that they have the next season a progeny, not of yellow corn alone, but composed of every colour and size, yellow, white, and black, large and small, upon the farm. Now many of the varieties of fruit trees have a similar power of intermixing with each other while in blossom, by the dust or pollen of their flowers, carried through the air, by the action of bees and other causes. It will readily occur to the reader, in considering this fact, what an influence our custom of planting the different varieties of plum or of cherry together, in a garden or orchard, must have upon the constancy of habit in the seedlings of such fruits.

"But there is still another reason for this habit, so perplexing to the novice, who, having tasted a luscious fruit, plants, watches, and rears its seedling, to find it perhaps wholly different in most respects. This is the influence of *grafting*. Among the great number of seedling fruits produced in the United States, there is found occasionally a variety, perhaps a plum or a peach, which will nearly always reproduce itself from seed. From some fortunate circumstances in its origin, unknown to us, this sort, in becoming improved, still retains strongly this habit of the natural or wild form, and its seeds produce the same. We can call to mind several examples of this; fine fruit trees whose seeds have established the reputation in their neighbourhood of fidelity to the sort. But when a *graft* is taken from one of these trees, and placed upon another stock, this grafted tree is found to lose its singular power of producing the same by seed, and becomes like all other worked trees. The stock exercises some, as yet unexplained, power in dissolving the strong natural habit of the variety; and it becomes, like its fellows, subject to the laws of its artificial life."—Pp. 4, 5.

Mr. Downing having given his own opinion upon the subject of raising fruit trees from seed, quotes Van Mons' theory, which he observes, has not found much favour in England.

Yet Van Mons was one of the raisers to whom we are far more indebted than to any other person for splendid fruits. Van Mons' notion of the proper system for raising new fruits was much the same as that of the old Tulip growers, who used to save seed from the breeders which had not perfected their colours, instead of the approved fine varieties which had. Mr. Knight's opinion was like that of the modern Tulip growers, who cross the fine varieties one with the other, and so produce something with the qualities of both.

"The Van Mons theory may be briefly stated as follows:—

"All fine fruits are artificial products; the aim of nature, in a wild state, being only a healthy, vigorous state of the tree, and *perfect seeds* for continuing the species. It is the object of culture, therefore, to subdue, or enfeeble this excess of vegetation; to lessen the coarseness of the tree to diminish the size of the seeds; and to refine the quality and increase the size of the flesh or pulp.

"There is always a tendency in our varieties of fruit trees, to return by their seeds towards a wild state.

"This tendency is most strongly shown in the seeds borne by *old* fruit trees. And 'the older the tree is of any cultivated variety of pear,' says Dr. Van Mons, 'the nearer will the seedlings, raised from it, approach a wild state; without, however, ever being able to return to that state.'

"On the other hand, the seeds of a young fruit tree of a good sort, being itself in the state of amelioration, have the least tendency to retrograde, and are the most likely to produce improved sorts.

"Again, there is a certain limit to perfection in fruits. When this point is reached, as in the finest varieties, the next generation will more probably produce bad fruit, than if reared from seeds of an indifferent sort, in the course of amelioration. While, in other words, the seeds of the oldest varieties of good fruit mostly yield inferior sorts, seeds taken from recent varieties of bad fruit, and *reproduced uninterruptedly for several generations*, will certainly produce good fruit.

"With these premises, Dr. Van Mons begins by gathering his seeds from a young seedling tree, without paying much regard to its quality, except that it must be in a *state of variation;* that is to say, a garden variety, and not a wild sort. These he sows in a seed-bed or nursery, where he leaves the seedlings until they attain sufficient size to enable him to judge of their character. He then selects those which appear the most promising, plants them a few feet distant in the nursery, and awaits their fruit. Not discouraged at finding most of them of mediocre quality, though differing from the parent, he gathers the first seeds of the most promising, and sows them again. The next generation comes more rapidly into bearing than the first, and shows a greater number of promising traits. Gathering immediately, and sowing the seeds of this generation, he produces a third, then a fourth, and even a fifth generation, uninterruptedly, from the original sort. Each generation he finds to come more quickly into bearing than the previous one, (the fifth sowing of pears fruiting at three years,) and to produce a greater number of valuable varieties; until in the fifth generation the seedlings are nearly all of great excellence.

"Dr. Van Mons found the pear to require the longest time to attain perfection, and he carried his process with this fruit through five generations. Apples he found needed but four races; and peaches, cherries, plums, and other stone fruits, were brought to perfection in three successive reproductions from the seed."—Pp. 6, 7.

Mr. Knight's success in raising fruit trees was owing to his plan of what is very erroneously called, hybridizing. He would fertilize the pistil of one fruit with the pollen of another, and from the seeds produced he raised trees, among which, some partook of the good qualities of both. Our author describes the process of crossing very clearly; but this has been done so well, and so often, and withal so long ago, that we need not quote it; nor is the following new to our readers, though it may be to some: it is the very natural conclusion which we have drawn in some of our papers on hybridizing, as it is improperly called; but it is in point.

"In order to obtain a new variety of a certain character, it is only necessary to select two parents of well known habits, and which are both varieties of the same, or nearly allied species, and cross them for a new and intermediate variety. Thus, if we have a very early, but insipid, and worthless sort of pear, and desire to raise from it a variety both early and of fine flavour, we should fertilize some of its pistils, with the pollen of the best flavoured variety of a little later maturity. Among the seedlings produced, we should look for early pears of good quality, and at least for one or two varieties nearly, or quite as early as the female parent, and as delicious as the male. If we have a very small, but highly flavoured pear, and wish for a larger pear with a somewhat similar flavour, we must fertilize the first with the pollen of a large and handsome sort. If we desire to impart the quality of lateness to a very choice plum, we must look out for a late variety, whether of good or bad quality, as the mother, and cross it with our best flavoured sort. If we desire to impart hardiness to a tender fruit, we must undertake a cross between it and a much hardier sort; if we seek greater beauty of colour, or vigour of growth, we must insure these qualities by selecting one parent having such quality strongly marked." —P. 11.

The volume thus opened presents us next with all the modes of grafting, budding, layering, and raising from cuttings, none of which is new on this side of the Atlantic. There are occasionally some appropriate observations, which are both interesting and instructive. As an instance, we give some remarks on the influence of the stock and graft, which is curiously described by De Candolle.

"The well known fact that we may have a hundred different varieties of pear upon the same tree, each of which produces its fruit of the proper form, colour, and quality; and that we may have, at least for a time, several distinct, though nearly related species upon one stock, as the Peach, Apricot, Nectarine, and Plum, prove very conclusively the power of every grafted or budded branch, however small, in preserving its identity. To explain this, it is only necessary to recall to mind that the ascending sap, which is furnished by the root or stock, is nearly a simple fluid; that the leaves digest and modify this sap, forming a proper juice, which re-descends in the inner bark, and that thus every bud and leaf upon a branch maintains its individuality by preparing its own proper nourishment, or organizing matter, out of that general aliment, the sap. Indeed, according to De Candolle, each separate cellule of the inner bark has this power of preparing its food according to its nature; in proof of which, a striking experiment has been tried by grafting rings of bark, of different allied species, one above another on the same tree without allowing any buds to grow upon them. On cutting down and examining this tree, it was found that under each ring of bark was deposited the proper wood of its species, thus clearly proving the power of the bark in preserving its identity, even without leaves.

"On the other hand, though the stock increases in size by the woody matter received in the descending sap from the graft, yet as this descends through the inner bark of the stock, it is elaborated by, and receives its character from the latter; so that, after a tree has been grafted fifty years, a shoot which springs out from its trunk below the place of union, will always be found to bear the original wild fruit, and not to have been in the least affected by the graft.

"But, whilst grafting never effects any alteration in the identity of the variety or species of fruit, still it is not to be denied that the stock does exert certain influences over the habits of the graft. The most important of these are dwarfing, inducing fruitfulness, and adapting the graft to the soil or climate.

"Thus every one knows that the slower habit of growth in the Quince stock, is shared by the Pear grafted upon it, which becomes a dwarf; as does also the Apple when worked on the Paradise stock, and, in some degree, the Peach on the Plum. The want of entire similarity of structure between the stock and graft, confines the growth of the latter, and changes it, in the case of the Pear, from a lofty tree to a shrub of eight or ten feet in height. The effect of this difference of structure is very apparent, when the Peach is grafted on the Plum, in the greater size of the trunk above, as compared with that below the graft; a fact which seems to arise from the obstruction which the descending sap of the graft finds in its course through the bark of the stock."—Pp. 24, 25.

Knight accounts for the disposition of the plants grafted on these dwarfing stocks to bear earlier, by attributing it to the obstruction formed to the descending sap. This is a very pretty theory, but nothing can be more erroneous; were it not so, how is it that root-pruning produces the same effect? nobody can say there is any obstruction to the descending sap in trees so treated. The fact is, half the theorists make the descending sap a wonderful agent, while their proofs of its agency, or otherwise, are lame and impotent. The true secret is, that there is a less supply of sap as compared with the work it has to perform, and that diminished supply is easier and better elaborated, and prepared for the production of fruit. Let a tree be as vigorous as it may, it will keep growing for years without bearing; indeed it will continue to increase in size to a vast extent, so long as the supply of sap is superabundant; but when it has attained a growth that requires all the supply, and there is no longer too much for the size of the head, it will bear abundantly. On the other hand, if such a tree be root-pruned at a much earlier period, it will bear, not because there is any obstruction to the descending sap, but because the supply of sap is lessened, and the tree is starved into prematurity. In the same way will the starving of a plant throw it earlier into bloom; the descending sap has no more to do with the bearing or blooming of a plant or fruit tree, than it has with the man in the moon. We notice that the author mentions also the fact, well established, it is true, but not half enough attended to, that *the stock upon which anything is grafted, should be adapted to the soil.* Thus he says, the Peach, which on its own roots will hardly live on chalky soil, thrives if budded on the Almond; whereas on clay soils it is only successful on the Plum; and in sandy soils, where it would not grow on any other, it flourished when worked on the mountain Ash. We do not vouch for all the facts in illustration, but we have good reason to know that it is no use attempting to grow fruit trees upon some stocks, while they luxuriate upon others. The author, however, goes somewhat further. He says: "A variety of fruit which is found rather tender for a certain climate, or a particular neighbourhood, is frequently acclimatized by grafting it on a native stock of very hardy habits;" and in illustration of this, he gives us a fact which only illustrates the former position. He says: "Thus, near the sea-coast, where the finer plums thrive badly, (he means, perhaps, do not thrive at all,) we have seen them greatly improved by being worked on the Beach-plum, a native stock, adapted to the spot." Now this does not affect the question of whether a tender subject is made hardy; it only adds one more proof, that stocks must be adapted to the locality before anything that is worked on them can flourish. The chapters on Culture are very well done, and for persons in the American States they may be useful. The history of the different fruits, and the descriptive catalogue, are full of interesting detail; not so much, perhaps, for those who have read the Horticultural Society's volume on the same subject, but nevertheless, it is one of the best volumes that we have seen on the subject of Horticulture, by an American author. In the description of the Apple, the following account is given of the dimensions and capabilities of two trees, which are so far off, that we would rather believe all about it, than have to go and see them:—

"The Apple is usually a very hardy and rather slow growing fruit tree, with a low spreading, rather irregular head, and bears an abundance of white blossoms tinged with red. In a wild state it is very long-lived, but the finest garden sorts usually live about fifty or eighty years; though by proper care, they may be kept healthy and productive much longer. Although the apple generally forms a tree of medium growth, there are many specimens in this country of enormous size. Among others we recollect two in the grounds of Mr. Hall of Raynham, Rhode Island, which, ten years ago, were 130 years old; the trunk of one of these trees then measured, at one foot from the ground, thirteen feet two inches, and the other twelve feet two inches. The trees bore that season about thirty or forty bushels, but in the year 1780 they together bore one hundred and one bushels of apples. In Duxbury, Plymouth county, Mass., is a tree which in its girth measures twelve feet five inches, and which has yielded in a single season 121½ bushels."—P. 57.

We may return to a notice of some points at a future page, but in the mean time we must do the author the justice to say he has, with compiling, and with his own practical observations, turned out a volume very creditable to himself, and to the science of Horticulture; and that the illustrations of the descriptive catalogue give a capital idea of the forms of the various fruits.

GEOMETRICAL FLOWER GARDENS.

THE NECESSITY OF PLANTING THE BEDS UNIFORMLY.

We observe, among the directions for planting these things, that uniformity seems but little attended to; yet the entire beauty of such gardens depends on a rigid observance of this one feature. What is the use of a uniform figure, if it is not to be planted with uniform colours? We observe, for instance, in a very recent publication, as well as in many which are considered authenticated works, a series of subjects recommended for the different beds, in which not two beds are to be planted alike, so that not only is there to be a total disregard of what effect is to be produced at the best time of the year, but a determination that at no one period shall the whole be in bloom together, and all the beds in a circle are to exhibit different stages of growth when out of bloom, and not two alike when in flower. Great variety ought not to be the aim in a flower garden. Suppose, in a geometrical garden with a centre, and four-and-twenty beds, of some form or other, all round this centre,—which centre, by the way, ought to be a circle of gravel, that a person might stand and see the effect,—these twenty-four beds would consist of four sixes, and these sixes might be divided into two threes, by planting each six alternately with two subjects. The most dwarf subjects should be nearest the centre; but nothing that is not naturally dwarf should be used at all. In early spring, bulbs would form beautiful subjects for a brief but showy period; but as this paper is not so much to go into the detail, as to insist on general principles, we need only say that six of these beds, forming equal distances all round the centre, might be alternately blue and white; another six, red and yellow; another six might be mixed with all the colours; and the outer six all one colour, whichever could be best done at the time; but our fashionable writers, after providing a figure perfectly geometrical, will have all the colours in one circle of beds, by which means the eye is offended with scarlet on one side, and white on another, completely overbalancing and destroying the whole intention of the figure itself. Those who wish to have all the beds different, should have no uniformity in their figure and disposition. There could be no object, then, in depriving them of their favourite varieties; but at this time of year, (July 1st,) we have six beds next the centre alternately. Nemophila and Erysimum, bright blue and bright orange; the next six, the white Candytrap and Phlox Drummondi, white and reddish purple; a third six, is Verbena, of two colours, scarlet and pale rose; and the fourth six, which are the largest, are planted in rows, six inches apart, in the circular form, corresponding with the outline of the circle. In these rows are seven colours of German Stocks going the whole circle of the garden, the white occupying the inside row, pale lilac next, slate colour, deeper purple, and dark following, bright scarlet, and deep red finishing. Now, the only drawback on this arrangement is, that it is temporary; the Stocks will be out of their prime in a few weeks; but, as between these rows of Stocks, there are China Asters, which will bloom about the same time, the Stocks must give way for them. But the principle of uniform planting, whatever be the subject, cannot be too strongly insisted upon; the whole charm of beds uniformly disposed, consists in their also being uniformly planted, and the colours, as well as the plants, fairly balanced. If the divisions are in eights, the alternating of the colours would be in quarters, or fours;—no matter, in fact, what the disposition of the beds may be, nothing should induce us to plant the subjects other than uniform. On one occasion we saw great attention paid to what was called uniformity of colours; but these might as well have been anything else for what they did as to effect; for instance, Nemophila Insignis was one of the blues, a small Campanula a second, and a blue Pansy the third,—exceedingly unlike, although all blues of some kind. Then, again, imagine the scarlets; one of them Verbena Melindres, one scarlet ten-week Stock, and a third, the scarlet Geranium. The style of the three plants so different, as to destroy all uniformity, almost as completely as if they had been different colours. There are certainly no other two plants so effective as Nemophila and Verbena; and now that the latter may be obtained in great variety, much may be done with them; but none should be used with Melindres, except the habit be quite as dwarf. Petunias make good plants for the largest sized beds, but on small ones they soon destroy the figure by over growth. Dutch gardens, upon a small scale, should never have a plant that reaches more than six inches in height; but, upon a larger and more effective scale, where the paths are two feet wide all over it, there is much greater choice of subjects. However, small or great, it is better not to see such gardens at all, than to see them planted without the most strict regard to uniformity.

THE DOUBLE HOLLYHOCK.

For some years the Hollyhock has had very flimsy poppy-like petals, and seemed but little inclined to any further improvement than increasing its doubleness; but Mr. Baron, of Saffron Walden, has succeeded in raising some varieties which are well calculated to advance that flower in general estimation. Some that he has shown have been decidedly much thicker in their petals, and, as a matter of course, more decided in their colours; for that is one of the inevitable consequences of thickened petals. The Hollyhock does not present the promise of imbricated petals. There is a sort of dish formed of the outer petals, similar to that formed in the Anemone; and this dish in the double ones is filled with a sort of confused mass of florets, or small flowers, so as to fill up the flower, as it were, to a complete half-circle. Very few persons expect so much from a flower as we do; few look forward for so much to be done; but even we were not prepared to see that so much had been done already, as Mr. Baron has done with them; and it would be well, if, for the sake of the floral world, he would let out half-a-dozen of his best varieties, or sell some of his best seed saved from the thick-petalled sorts. The plants would be better, because the sorts are worth naming, and should be propagated. The diversity of colours among Hollyhocks would, perhaps, in time be pretty nearly as great as that in Dahlias, because we have good approaches to both yellow and red, and some are nearly black. The plant too is one which, from its elegant habit, should be cultivated with as much care as anything we have that is hardy; there is plenty of room for improvement, and thickness of petal will advance it in many other points. Among the great faults of the flowers, as ordinarily grown, we may mention first the ephemeral nature of the blooms, which are destroyed in comparatively a few hours, by sun or wet. This causes a small portion only of the spike of flowers to be seen open at one time. Now, thickening of petals would prevent this; for the thicker the petals are, the longer the flowers last under ordinary circumstances. This allows more to be in flower at a time, and, consequently, the spike would be much more complete. In some localities there have been pains taken to cry up the Hollyhock at the expense of the Dahlia, by withdrawing some of the prizes and giving them for Hollyhocks. This was injudicious. In our opinion, the only proper mode of encouraging the Hollyhock would be to give good notice of prizes to be awarded for them, and to set forth the points which would be especially looked upon as the standard for judging, and the first should be thickness of petal; and, perhaps, for the first season or two, this one quality might safely be made the only one, because all else would follow. In these two seasons we would not even stipulate for doubleness, because, as the point most essential of all, it should be the only one rewarded at first; when that had been attained in some degree, there might be prizes for flowers with all the points. And this leads us to the other necessary qualities. After thickness of petal, roundness, doubleness, colour, fulness, and so forth, may each be considered in awarding prizes. The advantage of encouraging this flower must be seen at a glance. There is hardly a more elegant ornament at the backs of borders, among shrubs, and in the centre of clumps; their towering spikes of varied colours, form a splendid addition to even the most highly furnished gardens, even with all their present faults; and were the flowers rendered more permanent, and in consequence more brilliant, it would have claims which scarcely any other hardy subjects can boast. They live through all kinds of weather, require no removing two seasons out of three, or even more than that; then again, they want no stakes, and brave pretty nearly all sorts of weather. As a beginning, we should recommend the amateur to think of nothing, in his selections, but the brightest colours, and the thickest petals. From those with the thickest petals he should save the seed; sow them pretty much about the time that most perennials are sown, June or July; and when they are large enough, plant them out, one foot apart, in rows two feet from each other. Here they must be kept clear from weeds, and the earth between them must be stirred occasionally. They may be continued in this place until they bloom; or if wanted for ornament in the clumps, beds, and borders, they may be planted out where they are required; but there will be many to throw away, as well as a few to keep. Let nothing induce you to keep any that have not some very decided points of the many required: thickness of petal is one point; roundness and fulness of flower is another; a new colour is a third; closeness of the flowers to each other is a fourth; length and stiffness of the footstalks, so as to increase the size of the spike, is a fifth; and unless a flower possess one or two of these points, in much greater perfection than we have it at present, it ought not to be saved. The advantage of blooming the seedlings in the bed the first year, is that of being able to throw away the worthless ones the instant they open a flower, by which means the impregnation of the good by the bad is quite prevented; whereas, if they are planted out for ornament, they are not half so easily looked after, and even if they prove no better than others, or even worse than others, they are allowed to stand for ornament, and the whole of the seed is thrown back. The Hollyhock will stand for years in the same place, but it is proper, when you get a good one, to make the most of it by increasing it. The best way to do this is to part the roots after the plants have done blooming; these parts of the plant should only have one heart, as it were, and a bit of root; these should be planted out the same distance as seedlings, except so many as are wanted for the places the old ones were taken from. From this bed, where they are planted to grow into strength, they may be taken any time during the spring months, before they begin to rise for bloom; but when any one commences throwing up the spike, they will not remove without receiving a check. It would advance this flower much if Mr. Baron would send out either seed or plants; for it would take anybody three or four seasons to get up to him, if he did not advance a step; and it would be much better for the prospect of the flower improver, if he started people one, instead of their being four or five, seasons behind him.

G. G.

THE DRAINAGE OF GARDENS.

It is not too much to say that nine-tenths of the villa gardens are unfavourable to the growth of plants for want of a proper drainage; and all directions that may be given for the preparation of beds for delicate flowers, however fully they may be carried out, will, nevertheless, fail, if there be not a complete and effective course for the superabundant wet to be carried off. Some gardens are what may be termed high and dry,—some on gravelly or sandy soil,—some elevated considerably above the surrounding neighbourhood, yet they may be rendered every way unfavourable by springs in the locality, and the want of a proper escape for the water. If the springs lie high, and the soil is gravelly, the wet rises upon the roots, without any rain falling, and the chill which it gives is very destructive. So that, without almost inquiring or trying whether a garden require it or not, drains should be formed two feet below the surface, upon a gradual descent from the highest to the lowest part of the ground, and there an outlet of some kind must be formed for the waste water. Side drains must be made of a sort of herring-bone form, going into the main drain from the outer edges of the space to be drained; and thus all the superfluous moisture will be conveyed to the centre watercourse, which will discharge itself at the lowest point, from which place, by an open ditch, it must be forwarded to the nearest open drain. It is no use to say this cannot be done,—it is of no avail that you make up your mind the water cannot be got rid of; because, if that be the case, shut it up as a garden, and cultivate things of less importance. If, as will sometimes be the case, there are no visible means of carrying off the water, and from your having a house on the ground, you must adopt it as a garden,—you must make an excavation in the lowest part of it, and by letting the drains all go into it, the upper grounds may be drained, though the lower ones will be little the better. In such cases all the better things must be grown high up the ground, and the lower portion must be used for rough vegetables. With regard to flowers, many of them will not—cannot flourish, where there is stagnant water; the manure which is given to them is wasted, the soil they grow in is soured. They grow weakly, and spindle away, without the growers knowing what is the matter. Year after year they find themselves buying new things, yet their stock does not increase; the effect is alike mischievous on all kinds. In Polyanthus beds we find vacancies, and plants weakly; Primroses much the same; Pinks stand for months without growing, and then throw up miserably thin stems; Pansies turn yellow, and grow slim, instead of looking green and bushy. There is no going back with any flower without a cause, and, nineteen times out of twenty, it is the want of proper drainage. It is frequently directed that, in making a bed for Ranunculuses, Anemones, Pinks, Pansies, or other flowers, that the stuff be thrown out of the bed two feet deep; that there be six inches of brick rubbish put on the bottom; upon this comes some dung, and, after all, it is to be filled up with the proper compost described at the time. Anybody would fancy this a nice, dry, comfortable bed for the most delicate flowers in the world; but if the garden be not drained, the water will fill the brick rubbish, and sodden the dung; because the brick rubbish being porous, invites the surrounding stagnant water, and the invitation is so instantly accepted, that it has its own share, and some of the shares of the surrounding beds; so that people must not fancy their bed well drained, because they use the means in that one place; for, in fact, they only make provision to hold more water where their bed is, than the stagnant mould which they have removed would have had, had they not disturbed it. We have seen, in our time, a florist's garden in which every bed was constructed according to the best instructions for growing them:—the Ranunculus beds were bricked round just beneath the surface; the Tulip bed was boarded up six inches above the surface, and, as this was in the month of October, the soil was turned out of them like so many graves; the Tulip-bed was down on a gravelly bottom, the others were down to a close black hard mould, and all pretty dry. We were called in in consequence of several failures in the different flowers cultivated by the owner. We saw nothing remarkable in the appearance of things, but we did ask how far they had to dig down for water in winter time. Only one spade deep, was the reply, and that for months together. "Then there is your failure," said we; "it is no use to inquire further. Do a good three-feet drain down the centre path, and let nearly a foot of the bottom be filled with large stones; cover these with bushes, and fill in your walk upon it; do smaller drains down your side-paths leading into the centre one, and serve these the same." It was no use tampering with the thing; it was done in earnest. In a month, the water running from the middle drain would have turned a mill; there was no more water to be found a spit deep, and flowers grew as well with our floral friend as with anybody. He had complained of doing all this at great expense, and all the other at great expense, and never finding it answer; whereas by only undergoing this system of thorough drainage, all that had been done without effect previously was now in every respect successful. The Pansies no longer damped off; the Pinks gained strength; the Tulips were no longer weakly and discoloured; the Ranunculuses bloomed finely and swelled out well, and all things appeared as differently as if they had been growing ten miles another way. Such was the efficacy of draining a place in which hundreds of pounds had been expended, and the owner thought all had been done that could be done. One-half the people who grumble about the soil and situation, would be far nearer the mark if they complained of the water; it is not less fatal in the stomach of plants than it is in the stomach of animals; at all events, let every one, old and young, who cannot succeed to his liking, look well to his drainings, for he may, in the defects of that necessary operation, find the cause of all his troubles in the horticultural way.

LEYCESTERIA FORMOSA.

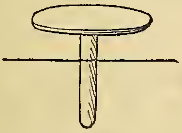
(Handsome Leycesteria.)

This hardy evergreen shrub has been generally reared as a valuable addition to our ornamental grounds, not less for its appearance as an evergreen, than its singular and elegantly drooping flowers, which hang from the ends of the matured shoots, and give the plant a singular and pleasing character, thus affording a most effective contrast among other ornamental shrubs. The plant was found growing on the Nepal mountains, eight thousand feet above the level of the sea, and proves perfectly hardy in our trying winters. It should have a shady situation, and requires moisture, and those conditions should be secured by its situation when planted out; and it is perhaps the more valuable, from the fact of its flourishing on the shady side of high plantations, where many of our best favourites will hardly grow. Dr. Royle introduced the seeds from India, but it is capable of being increased by cuttings or layers; and it is, perhaps, the more acceptable for enduring almost any common soil. The plant was named by Dr. Wallick, in honour of William Leycester, Esq., one of the Judges at Bengal, and a great patron of gardening.

SNOWDROPS, VIOLETS, BLUE BELLS, NARCISSUS, AND DAFFODILS.

How grateful the appearance of the early spring flowers! And of those, how much more simple and natural are the Snowdrop, the Violet, and the Daffodil, than the more gaudy Crocus and Tulip! The former remind us of the fields and green lanes; the latter, of the garden—the one, all innocence and nature; the other, culture and art. But Snowdrops and Violets, Blue Bells and Daffodils, should never be in mechanically formed beds; they seem, like birds in a cage, out of their natural places. They should be on some wild bank, in some sequestered spot, some little wilderness-looking place, formed by art, if you please, in exactly the proper situation, but in the closest imitation of nature, without the appearance of art. These flowers all do well under trees. They require no great depth of soil; they will grow up through turf; they flourish at the foot of a wall. In shade and sunshine, damp or dry, they will all grow and bloom somehow; but they especially flourish in the shade, and shady nooks should always be chosen. They should be planted without order, in patches, and separate; though it is not uncommon to see all of them springing up through a bank of Violets. They should not be disturbed for years, unless increase is wanted; in which case there might be hundreds of Violets formed out of a very small patch. But Violets can be increased wonderfully without disturbing them at all, by only taking off their runners, which, though not so long, are as plentiful as those on strawberries. It is often attempted to remove large patches of Violets, to produce an effect at once. We do not say this cannot be done, because in some congenial soils it would be as difficult to kill a patch of Violets, as it would in others to keep them. But the safest way is to plant single, young, healthy runners, that have just struck, about three inches apart, having first dressed the ground pretty well, and they will soon fill up all the intermediate spaces. To be still more safe, and not particular as to the time, place potted plants about six inches apart, without disturbing the balls; and they will, the first season, join close, and fill up all the spaces between each other. All these things look better in masses. The sides of a shady walk may be planted in patches, or large masses of Primroses, and the before-mentioned subjects; they rarely fail to make a beautiful appearance, and form a rich contrast to the more mechanical part of the garden. We do not object to the use of these flowers in geometrical or Dutch gardens, where the colour is really wanted: but they are out of place everywhere but in shady, wilderness-like places, or nooks and places where the more gaudy flowers would not look well. The increase of the Snowdrop is spontaneous; they have only to be dug up occasionally and thinned, that is, all the small ones; and some of the full grown, if they are too thick, taken away; the others replanted in their places again as thick as they need be, for they will be as thick as ever again. The Blue Bell is much of the same nature; the less they are disturbed, the better they bloom, and the more they spread out; and the time of year for removing these or Snowdrops, is when the leaf has turned completely yellow and begun to dry; for they are but a short time freed from the fibres. They very soon shoot again; and when they have begun to shoot forth there, it is morally impossible to move them without a check, which they do not get over the first year, and sometimes not for two. The Daffodil, and all the varieties of Narcissus, look well in masses; indeed, all these flowers are of that description. What is a single Snowdrop? an isolated

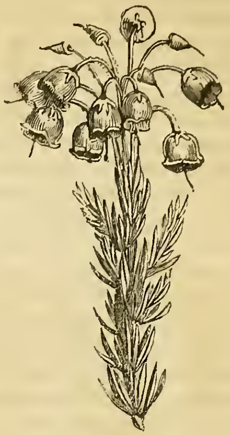
Blue Bell? a solitary Violet?—Lost! while a bunch or patch of either is beautiful. A half circular bed of raised mould, forming a slight bank under the window of a cottage, or it may be under each window, if there be one on each side the door, would be a sort of compromise between the formality of a bed and the wildness of a bank. This being covered with these flowers in large masses, would form beautiful little specks of wilderness in a garden, otherwise uniform; and there are many subjects which will enliven it in summer, when these fragile visitors shall have departed. But as they take no damage from anything in moderation standing on them, a succession of pots with Geraniums, or other gay inhabitants, would be sufficient to keep the places always lively. Stands may be contrived that would occupy but little room on the bed, and yet give plenty for the pots. Something of this kind may be passed down, even between the Violets, without damaging the roots or foliage; and as such stands need not be close together, or even near enough to take the air away, no harm can come to the permanent inmates of the border or bank. A row of dwarf pots round the front edge will make a good finish; and these contrivances will make a cottage garden natural and pretty in spring, and gay in the summer and autumn.



MENZIESIA EMPETRIFORMIS.

(Empetron-formed Menziesia.)

This is one of those beautiful little North American plants, which are well adapted for the front of a border, or for rock work, being scarcely more than six inches high, bearing a bunch of bell flowers at the top, with an elegant footstalk, which gracefully bends and renders the blossom pendant; the colour is a bright rose. The plant is considered scarce, probably from its having been heedlessly grown. It is, however, very easily cultivated in a bed, chiefly peat, such as is provided for American plants generally; and there is hardly a prettier object among a collection of Alpines. One reason for its scarcity, is the difficulty which attends the propagation. A layer is two years before it is fit to remove from the parent plant. Cuttings would, probably, be found a readier mode of propagation, but it is one of those subjects which gardeners in general set down as difficult to strike; besides which, it is, like many other plants, a slow grower, for which reason layers have been mostly made, as, though longer under hand, they are sooner of a size to use. It was introduced in 1810, and the flowers appear generally in June or July.



GARDENS IN WINTER.

There are many reasons why gardens are, in too many places, neglected in winter. One of the most powerful is the carelessness of most people as to what happens out of doors, and their general habit of seeking all their pleasures within. We see the gardens round London in a blaze of flower, with Dahlias pretty late; and the borders are likewise aided in appearance by many late-blooming flowers of a more dwarf kind, besides no small number that, like the Dahlia, keep blooming till frost cuts them off. A frost comes; the gardens, in twenty-four hours, are black, and brown, and filthy. Thus, in a great many places, the deplorable appearance of things remains for a considerable time. The Dahlias being worth something when taken up, are removed; and the holes they come out of, with the stakes, and decayed plants lying near them, assist in completing the devastation. How long many persons allow this it is impossible to say, but it is so desolate as to create, in some minds, a thorough disgust. Let us look to the geometrical or ornamental beds of the flower garden; the Verbenas that have been worth taking up have been removed; the ground is in hills and holes; the dead haulm of the famished flowers lies about; and the picture of desolation is complete. Now, this state of things should never be permitted twenty-four hours; all the decayed flowers and plants should be removed; the beds dug; the borders cleaned; those plants which live through the winter should be cleared of their decayed parts; the borders forked and laid level and clean; and raked over to remove large stones, sticks, weeds, and other incumbrances. And what then? Why then comes the management of the winter garden. Provide Evergreens, which may be had cheaply enough, and wherever there is too large a space bare, plant some of them. They need not, and should not, be crowded. A border does not look so well any way as when the objects can be seen distinctly, and are not confused. Let the Evergreens be varied. Box, Acuba Japonica, Common Laurel, Holly, Firs, Portugal Laurel, Arbor Vitæ, and many other subjects, are different from each other in colour and habit; and here and there one placed where there is too much vacancy, will give a finish, that could hardly be anticipated by those who have not done it. And in parts of the Dutch garden, and the small beds wherein the summer beauties have died or disappeared, plant Evergreens. Those fit for this purpose are still more cheap than the Shrubs needful for the borders; for these ought to be as small as they can be got—a foot high should be the extent. Let the contents of the beds be uniform, and let the plants be placed in them in a regular manner at proper distances. You do not want to fill a bed up close, as the flowers fill them; they should be a foot apart, or as near it as will enable you to dispose the numbers best adapted to the necessary uniformity in the planting. Dwarf plants could be had for a mere trifle; move them when the time comes in the spring, for putting out the flowers, and not till then. The same day that sees the Evergreens removed, sees their places supplied by the prepared summer crops of flowers. If these plants have been sunk in pots, they will only require to be sunk in them again, at some unimportant part of the ground, to rest until wanted again; and the same may be said of such as must be removed from the borders. In laying out the different plants for the geometrical gardens, Dwarf Red Cedars and Dwarf Arbor Vitæ, even if only six inches high, are pretty objects, and might alternately fill the beds nearest the centre. Dwarf Green and Variegated Hollies might alternately fill those further outwards. Small Portugal Laurel and Acuba Japonica, might have alternate beds, yet nearer the outside; and all these things would be growing into money, merely requiring to be shifted to and from their growing and winter quarters, as required. None but those who have been witness to these alterations, can form the least conception of the improvement that Evergreens give the place in winter; and we assert that it is the first object, or rather should be the first object, of a gardener or amateur to keep the beds and borders well furnished. When these dwarf or other plants have been all the winter in the beds or borders, and require to be removed, and are not in pots, they may be taken and planted about a foot apart, anywhere together, until they are wanted again for a similar purpose; but as they would do very well a year or two in pots, it would be as well to pot them into old pots, and bed them out, as they will then suffer less by removals spring and fall. A public writer, some time since, in a work which many people quote as an authority, actually recommended gardeners to furnish their borders and beds in winter, by cutting branches of Evergreens, and pruning them up into the forms of shrubs with a pointed stem, and so thrust these into the ground; and he assured the public that they would keep green all the winter and spring. The experienced portion of the gardening world were disgusted at the meanness of the idea, and the injury it was calculated to do the trade, and many were the remonstrances against so degrading a contrivance; but when the amateurs who had faith in the publication in which it appeared, followed the advice, and found these Evergreens brown, even before Christmas had fairly passed, they were indignant at being the dupes of so groundless a theory, and so mean and humiliating a counsel. The fact is, that the person who advanced the deception, and boasted that it would look as well as if planted, though he held a respectable situation, was writing to make himself conspicuous, and was thoroughly ignorant of the effect which the weather, in winter time, had on branches of Evergreens, or he never would have asserted that they would remain green all the winter and spring. He had seen cuttings of Evergreens look as well in the spring as they did when they were put in, and, upon this fact, he assumed that branches would. The cuttings were not struck when he saw them, yet looked quite as fresh and he followed out the principle upon which a l theorists base their speculations, "what is true with respect to one thing must be true with respect to all others." The branches, however, did not happen to be one-year old wood, and did not obtain the protection of a hand-glass each, but encountered all the drying winds and hot sun, and turned brown as rapidly as they well could, much to the annoyance of the persons who acted upon such advice, and rendered themselves the laughing-stocks of their neighbours; these brown "Evergreens" rendering their fancy gardens very soon conspicuous, and when removed, leaving them very bare. Besides all this, supposing it had answered, what would the deception have saved? A few pounds, perhaps, for which the employer's character as a gentleman of liberal principles would be bartered, and his place made a deception as unworthy of a decent establishment, as of the gardener who would condescend to so mean a trick. In all probability, Shrubs to answer the purpose of the small beds, could be purchased at a pound per hundred, and that money as sure and as safe an investment as it would be in the funds ; for such plants would last seven years for one place or other, and then might be permanently planted in the park or premises, or sold again to make way for smaller ; or rather, by obtaining a few small ones every year, and finally disposing of a few larger ones, everything might go on well, year after year, for the appearance of the winter garden.

HORTICULTURAL NOTES.

Mimulus.—There are great numbers of seedlings raised from the different cultivated species of Mimulus, and many of them of considerable beauty. Some years since there was a very pretty herbaceous variety in cultivation, called Variegatus, white ground colour, with fine purple spots : this seems to be nearly or quite lost, though it was very distinct and pretty. Probably the lilac blue-flowered M. alatus, and M. ringens, would produce something new in colour. M. Mc Lainii, and M. roseus superbus, have been some years in cultivation, and still rank as very good sorts. The fault of the varieties raised from M. cardinalis is, the reflexing of the lobes of the flower ; but this does not occur so much in those bred from M. roseus.—*Gard. Journ.*

Seeds.—In the simple operation of seed sowing, great economy could at once be brought into practice, by making healthy preparations, and studying the most advantageous season for sowing each variety, according to the variation of the season, the soil, and the situation of each locality. By sowing each variety thinly, much stronger, and more healthy plants will be obtained, that will have many advantages over thickly sown, drawn up, weakly plants ; besides, much labour is required in thinning out thickly sown plants, that could be more advantageously employed ; and there is the disadvantage of having weakly plants, that are, moreover, liable to get much disturbed and unsettled by the process of thinning, which greatly retards them in their future progress, and subjects them to the attacks of insects.—*Ibid.*

Colours of Flowers.—To find the colours that contrast, the following simple and ingenious method may be resorted to. Take a sheet of white paper, upon which place a red wafer ; look at it steadily with one eye for half a minute or so, without allowing the eyelids to close, and then look from the red wafer to another part of the white paper ; a green spectrum will be seen, of the same size as the wafer ; and this is the colour which would form the true contrast to red : in like manner, an orange wafer will produce a blue spectrum ; and hence blue is the true contrast to orange ; yellow to indigo ; green to reddish-violet ; blue to orange red ; indigo to orange yellow ; and violet to bluish-green. By a little attentive study, it will be seen how easily any gardener might make himself acquainted with the principles of the science, sufficiently to avoid gross errors in the composition of colour in his flower-beds.—*Ibid.*

Cotoneaster microphylla.—This shrub has been noticed by Mr. Murray, of the Glasgow Botanic Garden, to grow in a direction towards the north ; and Mr. Sim, of Footscray, confirms this observation. Mr. Murray mentions a plant growing over a south wall, which had reached the top, with even the smaller as well as larger branches closely adhering to it, without fastening of any kind ; and Mr. Sim instances a bush of the same tree, which, while it had not grown to the southward, would have extended upwards of twenty feet in a northerly direction, had not its branches been stopped short of that distance by the intervention of a walk. These instances seem to point to a peculiarity in this plant which has not received attention hitherto.—*Ibid.*

Pinuses.—The Dropmore collections have, it appears, suffered but little from the late winter. Of the Mexican species, Pinus patula has suffered most, and may now be regarded as being tender ; P. apulcensis promises to be as hardy as a Scotch fir. Of the two trees of P. insignis, one has not a leaf browned ; the other is a little touched, here and there. Deodari and Araucarias are literally rushing up to trees ; of the latter, a variety, or new species, from Chilian seeds, is beginning to show a peculiar habit. P. monticola has a good many cones on it ; but the glory of the collection, just now, is Abies Webbiana, many of whose cones, of the richest indigo colour, stud the branches, and having been well powdered with pollen, may be expected to yield a crop of seed. As to A. Douglasii, and those others that were formerly objects of so much interest, it is sufficient to say that they have now become as much at home in the woods of Dropmore, as if they were still inhabiting the mountain side in Oregon. We find that the grafted Deodari are going off, as we long ago predicted would be the case ; and this may serve as a general warning to buyers of Coniferæ.—*Ibid.*

To destroy the Scale.—Mr. Barnes, of Bicton, recommends a plan, which he says is quite effectual, and costs scarcely anything but the labour. He says :—" Take of good wood ashes (dry) one peck; place this in a tub, pouring in twelve gallons of soft water, and allowing it to soak for twelve hours, stirring it up occasionally: then take of fine soft clay, and of fresh cowdung, one peck each, and mix them well together into a 'puddle;' add two pecks of fresh chimney soot, and a peck of fine charcoal dust that has not been wetted; place these ingredients together, and add enough of the lye of the wood ashes to bring it to the consistence of workable paint, stirring it well up with an old broom. This must be allowed to stand for two or three days, and will then be in good condition for painting over the stems, branches, and every part of the plant affected with the scale, which it will readily extirpate.—*Gardeners' Journal.*

Bulbs.—We do not despair of seeing Vallotas, and Hippeastrums, with Guernsey and Jacobæa Lilies, as common as Hyacinths, and in the common air. But how is this to be done, it will be asked? By what new process can we hope to transfer the inhabitants of countries so much warmer than our own from the green-house and hot-house to the flower border? Nothing is more feasible. We have only to imitate our Belgian friends. Glass and sand, with a little skill and patience, will work greater wonders than this. Let us suppose a bed for the cultivation of such plants, to be formed of proper materials, in a thoroughly well-drained situation. It may be surrounded by a bank of earth two feet thick, and of the necessary height at the back and front: on this may rest a wall-plate for the reception of the sashes. As soon as the winter approaches, the sashes would be fitted to such a bed; as soon as the summer comes, they would be removed; and nothing would then be left except a common bed, the banks surrounding which might be decorated in twenty ways. When plants are not very impatient of cold, no further assistance would be required; but if they are particularly tender, a few inches of dry sand spread over the bed in autumn, and removed in the spring, would guard them well. —*Gardeners' Chronicle.*

Rhododendron nobile.—During the winter of 1835, or early in the spring of 1836, I received a letter from the island of Ceylon, written by a medical gentleman (who was an excellent botanist): accompanying it was a packet of the seed of the Rhododendron nobile. Of the tree he speaks thus:—"I write from a plain over eight thousand feet above the level of the sea, which presents just now one of the finest sights imaginable, being one sheet of scarlet as far as the eye can see—the Rhododendron nobile being in full flower; but from the great elevation and consequent cold, the tree does not attain a greater size than a well-grown apple-tree; in the valley it grows three months earlier, and grows considerably larger. I feel confident that it would succeed well in Ireland in the open air, and stand the severest winters." Immediately on receiving the seeds, I had it sown, and was pleased to see a fine crop come up. I did not venture to try them in the open air until the summer of 1842, when two were planted in my garden; the remainder I kept in a green-house, but finding they were not in health, I last autumn turned all out; as the two first had not only stood our severest frosts, without shelter of any kind, but were growing most vigorously; the shoots of the year being as thick as those made three years before by Altaclereuse, or any of the hybrids. As those that I have had the good fortune to raise are not only perfectly hardy, (near Cork), but flowering so late as will secure the bloom from being injured by our spring frosts, I am confident they will prove a great acquisition to the gardeners of Great Britain. The Rhododendron nobile is a very fine species, allied to R. arboreum, with deep-crimson coloured flowers, very round and compact in form.—*Ibid.*

Moveable Green-houses.—Strong moveable roofs, to be applied in the end of September and removed in April, will render green-houses unnecessary in half the gardens of the country; and will bring the winter climate of China to the gates of London. An old wall, with a border twelve feet wide in front of it, might be easily fitted up with a moveable glass lean-to, and planted with multitudes of New Holland, Cape, Chilian, Spanish, and Chinese plants. That would be the place for Camellias, Tree Rhododendrons, and the gaudy Australian Myrtle blooms. Japan Lilies, Syrian bulbs, Mexican Torch Thistles, Cape Oxalids, and all the thousand gay forms of twining exotic vegetation, now known in a languishing state in our green-houses, would form thickets unrivalled, even in the native country of such plants. There would be no need of heating apparatus; the autumn sun and the rain-proof roof would provide against cold; and as for our summers, they would suit such vegetation even better than that which nature has provided them with at home. Such a border would be a shrubbery with a glass roof; a walk could be conducted through it; and everybody who heretofore has built a green-house, might substitute a winter garden. —*Ibid.*

Clerodendrons.—The free-blooming scarlet species of this genus are hardly excelled for splendour. It may not be known to every one that these may be retained much longer in bloom, if treated more as green-house than stove plants, when they are approaching perfection. A warm and a moist temperature are indispensable during the period of their growth, to bring them to a fine flowering condition; but to enjoy them for any time, they must be gradually exposed to a much lower temperature than that of a warm moist stove. In the green-house they will continue blooming three months at least, when, in fact, there is little else to decorate it. In the conservatory, also, they will form beautiful objects; and for such purposes they should be chiefly grown. Many of these plants cease to be cultivated, because it is almost universally understood and admitted, that they can only be seen in perfection in houses that would positively broil any ordinary European on a summer day.—*Gardeners' Chronicle.*

Rochea falcata.—The principal thing to be attended to in growing this plant (known also as Crassula falcata) is the situation: it loves a full exposure to the sun heat, and to be near the glass, which gives them a strong stiff habit. The common mixture of loam, peat, and sand, suits it perfectly. In the autumn, water is to be withheld gradually, and in winter altogether, when the plants will become shrivelled; but they will become plump again in the spring when started into growth: the growth should be encouraged as much as possible, and a place on a shelf in the hot-house is for this reason desirable. Young plants, raised from cuttings in the spring, and grown well during the summer, should be strong enough to flower the next spring; after this, they should be grown on again, and the next year will produce six or eight flower heads, and so on, for three or four years, when they become unsightly.—*Ibid.*

Camellia Japonica.—Of the many ways of propagating this plant, few succeed better, for a new and dear variety, than that we should call bud-grafting. This used to be done by Messrs. Brown, of Slough, very generally, and with good success; every bud, with the smallest portion of wood attached, made a plant. The stock was cut down to within two inches of the surface, and the small piece of wood, with the bud attached, grafted on the top. Many ways may be employed to join these, and the only necessary precautions are, first, to have a bud of the stock on the highest portion of the stock, and join the graft so as to bring down the bud in it below that of the stock, but on the opposite side. Whether this is by a sloping cut, and a splice like a broken stick, or by notching the stock and placing the bud as a wedge, or making the stock the wedge, and the graft a sort of saddle, it matters not. A good fit is necessary, and the barks of the stock or graft must meet even on one side, at the least, and by these means you may make a plant of every leaf or eye.—*J. W.—Gardeners' Gazette.*

Horse Radish.—Trenching in bits of the roots an inch long about a foot deep into the ground, is as good as crowns, which many fancy are necessary. It is well worth and one's while to trench in a row or two, in good rich ground, in the month of November. It will come up in May, and form straight good sticks in a year, which thicken into handsome ones in two. When I want one, I dig down to the set, and cut it off close and cover it up again; but it is better to dig it up clean and place another set there; for the old set is apt to throw up several shoots, and they come weaker. The sets should always be part of a good and thick stick, in preference to portions of thin ones. This is not a new practice, but it is not a general one.—*M. R.—Ibid.*

The Running of Carnations.—This subject has caused more discussion than almost any other connected with gardening, except the breaking of Tulips. Before this subject is fully discussed, the facts should be fairly considered; and those which are well established are curious. First, not only do the several layers of the same plant come one run and another good, but, on the *same plant*, one will come fine and the other coarse, although within half an inch of each other on the same stem. Nay, more, the same flower will come half run and half fine. One would think this settled the question about the soil having nothing to do with it. Secondly, run flowers planted out (which, if they are scarce, they should always be), will occasionally return back to the fine condition, as completely as the Tulip will break from the breeder, although grown in the same description of soil. This seems another proof that the soil has nothing to do with it. We cannot have any reason to suppose that the compost they are growing in can affect one flower, or half a flower, and not affect the rest of the bloom or blooms. Let any one who discusses this subject, take these facts, which are indisputable, into consideration.—*P. S. R.—Ibid.*

Cedrus Deodara.—The following is the dimensions of a plant of this tree, raised at Heckfield Place, Hartford Bridge, Hants, sixteen years ago. It has been planted out ten years, and stands in an exposed situation, where it proves to be as hardy as the oak, being altogether uninjured by the late severe winter. It is planted on a dry gravelly soil, and is now in a most flourishing condition; the height is seventeen feet six inches; the circumference of the branches, thirty-five feet; the circumference of the bole above ground, two feet; ditto at breast high, seventeen inches. I very much question whether larch, in a more favourable situation, would have made greater progress in the time. It is a pleasing object standing as a single specimen in the park, with its branches drooping to the ground.—*Wm. Elphinstone.*

WATERING PLANTS.—It may be well to bear in mind, that the object of watering plants in pots, is to place the roots in an *equally moistened condition;* and therefore the constant drippings which are too often indulged in, wetting only the surface of the soil, and leaving the mass of the roots as dry as before, is not the proper way of performing the operation.—*M.*

HYBRID ALSTRÖMERIAS.—The Hon. and very Rev. the Dean of Manchester (Mr. Herbert), lately saw at Ghent, in the nursery of Mr. Van Houtte, two beds of hybrid Alströmerias, of very great beauty. Mr. Herbert speaks of them, in a recent number of the *Gardeners' Chronicle,* as being of "every tint, from scarlet to lemon colour, and from crimson to pale pink, variegated with white. It would have been difficult to find two plants, amidst the great number then in bloom, of which the flowers were exactly similar; some being as remarkable for the delicacy, as others were for the brilliancy of their hues. Another very long bed of younger plants, raised from the last year's seed of the former, was in vigorous progress. The foliage of all the plants was nearly similar, the average height of the inflorescence being, I should think, between twelve and eighteen inches. Mr. Van Houtte informs me that he purchased the whole from the person who raised them; and from their appearance, I should pronounce them mules between A. Hookeriana and hæmantha. I cannot assert that A. pulchra and aurantiaca may not have been in part concerned in their production, but I rather attribute it to Hookeriana, and one of the best varieties of hæmantha, such as Barclayi. They were planted in a mixture of vegetable earth, or strong soil with the Ghent sand; and in some parts the plants seemed to have suffered from the compost being too light and sandy. I do not recollect having ever seen a bed of flowers so beautiful." Mr. Herbert is perhaps better acquainted with the species of Alströmeria, and indeed of bulbous plants generally, than any other botanist in this country; and is therefore well qualified to form an opinion of any improvements in the appearance of these plants.

NEW ORANGE LILY.—In the nursery of Mr. Van Houtte, of Ghent, is a new Lily, which, in the opinion of the Hon. and Rev. W. Herbert, is the finest Orange Lily that has been produced. It has been raised from Lilium atropunctatum, fertilized by a strong growing Orange Lily called L. croceum, by Mr. Van Houtte. "The plants were of middle growth, with very florid heads; and the flowers very large, brilliant, and exhibiting a good deal of diversity. This variety will be a great acquisition to our gardens, seeming to be very healthy and vigorous."

BERBERIS DULCIS.—It is not common to see this plant full of fruit. If left to itself, it grows with long rambling shoots; it flowers, but produces no berries; but if the shoots are stopped, a bushy plant is produced, and plenty of fruit. At Messrs. Paul's nursery, Cheshunt, there are several plants covered with berries, treated in this way.

AWARD OF PRIZES.—The Metropolitan Society, which hardly professes to give many prizes, but whose awards carry more weight than those of any other Society in the kingdom, actually gives ten in each class, for the most unimportant florists' flowers. The plan is, to make but ten per cent. difference between any two prizes that are next each other; to drop, in fact, but two shillings in the pound, or one tenth. Thus they award 20*s.*, 18*s.*, 16*s.*, 14*s.*, 12*s.*, 10*s.*, 8*s.*, 6*s.*, 4*s.*, and 2*s.*; so that growers of all classes are strongly encouraged to correspond and compete—and few are disappointed. The object, in fact, is to draw growers of all pretensions into the same class, and not to deter them by hopeless prospects. Suppose, there were only these prizes, 2*l.* 10*s.*, 1*l.* 5*s.*, and 1*l.*, three good growers take all chance away from their inferiors; whereas, by the more liberal mode of dividing the sum among twenty, a less ambitious, and less pretending grade would cheerfully contend for the honour of taking some of the numerous prizes, for the fourth prize is 14*s.* And then, with this Society, the money is quite a secondary consideration with almost every shower. There is, however, in this mode of arrangement a first-rate lesson for Horticultural Societies.

SUPPORTS TO PLANTS.—There has been a good deal of ill-natured remark about the mode of propping up Roses, Geraniums, and such like plants, and perhaps some of it has been deserved. No one will deny that the Geranium is greatly distorted, to obtain a great mass of bloom, and that plants so excited are necessarily propped at every shoot, to prevent their hanging about the pot. But what is the effect of the supports? Bad. Who can look at the forest of props in one of the modern large plants, without regretting that they were ever permitted to be so treated? First, because the character of the plant is destroyed; second, because there are no sides visible for the props; thirdly, the bloom is totally destroyed, as to individual character, to produce a mass out of character. We strongly urge the managers of shows to have a class of Geraniums, one year old, with no obligation to have more than one truss. We should get Geraniums the second year better than the seedling year, for it would be a moral certainty that the size of the individual flower and truss would be nearly, perhaps quite, doubled, while the texture, symmetry, and general appearance would be greatly improved. We trust some of our floral brethren will see to this.

GESNERA DOUGLASII.—Mr. Brown, of Stoke Edith gardens, has had this plant planted out in a border at the west end of a pine-stove, since 1837 ; and it has remained there ever since, flowering every summer, dying down in the winter, and reappearing in the spring. The crown is not above two inches beneath the surface, but it has had no other protection of any kind.

FUNGI IN MELON-BEDS.—Mr. Robertson, of Clifton House garden, writes that he has been much troubled with fungi growing up among his melons. "The plan I have adopted," observes Mr. R., "for the last five years with great success, is to dust the fungi well with hot lime ; it kills them immediately, and does no injury to the melons."

DRAWING-ROOM MOSS VASES. — In the articles on Domestic Gardening we have referred to the cultivation of plants in Wardian cases, a pursuit calculated to afford much gratification to those who are unable, from any cause, to "garden" on a larger scale. But even the Wardian case may be too large ; and in these cases, the bell-glass, of a foot or two in diameter, may prove equally interesting. In fact, one of the many elegant designs for vases, covered with a dome-shaped glass, and filled with minute plants, would form an object worthy a situation on any "drawing-room" table. One of these, filled entirely with different kinds of mosses, would be exceedingly pretty, and would have the advantage of perennial and unchanging verdure. It is not our intention now to enlarge on this point, our object being simply to direct attention to the subject. On a future occasion we may go into detail, with reference to the means of carrying out such an object, and offer a design or two illustrating our remarks.—*M.*

BUDDING OLD FRUIT TREES.—It may be worth knowing that, in the case of Peach trees, for instance, when a vacancy may occur, and it is not practicable to fill it up in any other way, a bud or two inserted in the contiguous main branches will be a means of filling up the space ; or the same thing may be done by side grafting, at the proper season, on those kinds of plants upon which grafts will succeed. I have frequently seen vacancies filled up in this way ; and a facility is afforded to introduce different varieties of fruit, so as to prolong the season in which the particular kind of fruit may be had in perfection. It is in the small gardens of amateurs, where space is limited, that the introduction of two or three varieties on one tree, may answer a useful purpose. All that is essentially requisite is to select varieties, as near as possible, of equal vigour of growth.—*S.*

SUNFLOWERS.—A popular fancy gives to these plants the property of always presenting their blossoms towards the sun; and of course, in doing so, following his course through the day. However the idea may have originated, it is not correct ; for it is by no means unusual, indeed common, to see the different flowers of these plants facing every point of the compass.—*B.*

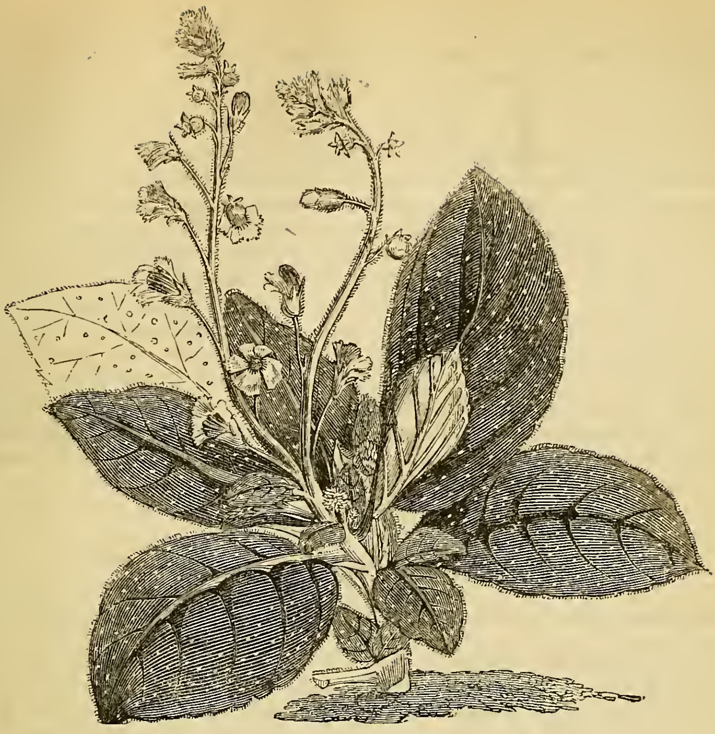
BLISTER ON PEACHES.—The blister on the leaves of Peach trees, a disease which, in some seasons, or rather every season, makes its appearance, more or less, during the months of spring, has of late occupied much attention in the gardening world. Some attribute it to the low temperature to which the tender leaves are subject during the night, in the month of April, or thereabouts ; but others have experienced the disease on trees which have been kept in a forcing-house, regularly heated to 60 degrees. Some, again, place it to the account of excess of moisture in the soil, inducing an overcharging of the vessels of the plant ; but then instances are adduced where trees are planted outside a forcing-house, have their roots deluged by all the water that falls on the roof, dripping and draining through the borders, and yet are free from blister. Some talk of the immature wood of the previous season having some connexion with its appearance ; while others suffer when the wood is sufficiently matured, at least to bring plenty of well-flavoured fruit. It is difficult to get extricated from this labyrinth. It has, however, been suggested that these several causes, acting in conjunction with each other, may have something to do with its appearance, and this does not appear te be at all improbable. Protection, by means of a covering of net, or some similar material, used early in the spring, is considered a generally successful means of preventing its appearance.—*R.*

EXHIBITIONS.—Floral exhibitions are losing their attraction, notwithstanding the great assemblages of people who go to hear bands, and see company ; and they lose ground, because the charm is taken away from them, by allowing a great assemblage of coarse and worthless plants to be put up for competition. It would be a good plan if all the Societies would make up their minds to throw out the most meritorious collection for any one bad plant ; for this would be following the example of the true florist, who decides that any downright imperfection shall disqualify a flower. It is a question whether the number of things required is not against the character of a show ; and it is by no means a question, for it is a certainty, that everything is placed much too close on the tables. There ought to be sufficient vacancy between the plants to allow of their being seen well all round, or nearly so, and to prevent the hiding of blemishes. At a recent exhibition, the plants of two exhibitors, although placed by the respective growers on the tables, ought to have occupied a considerable deal more than twice the room, and the plants would, for the most part, have been seen to greater perfection; whereas, when crowded, they are reduced in value, to all appearance, because coarse plants would look as well when crowded into a mass as better ones do. It is a coarse taste that looks for masses of flower, instead of elegance of plant; and it must be obvious, that however bare a plant may be below, the defect may be hidden by the close grouping. Two-thirds of the plants at some shows are worse than the common nursery stock at a good garden; and so long as it is permitted that subjects of all ages, and sizes, and qualities, shall be placed on the tables, so long will the shows be of the present unmeaning character. It is a question, whether there ought not to be an examiner to pass all the plants that shall be intended for competition; and we are not unmindful of the trouble it would give, when we recommend it; but it would insure quality in the things set out, and save us from the sameness of most floral exhibitions. An experienced man could tell at a glance, whether a plant is fit or unfit to exhibit; and so that the tables are neat and well-fitted up, the plants would be better worth looking at, when fairly set out with plenty of room, than they are when crammed, as we now see them. These are hints for the getters up of shows, and the Societies who are legislating for time to come.

The Aloe frozen.—It is not an uncommon occurrence to see the Aloe, when left out in the autumn rather too late, lose outside leaves, and have the whole damaged. If these are left to themselves, they will not grow, perhaps, but continue to decay. The only remedy is to take them out of their tubs, wash the mould from the roots, and then cut away every portion that is decayed. It will often be found that all the fibres near the original pot or tub, have been frosted and rotted, and they would continue to rot until the whole plant would be sacrificed; so that every bit must be cut away with a sharp knife, till nothing but sound root, or even no root at all, be left. The plants should then be potted in a compost of sand or road drift (from a gravelled road), peat, loam, and turf mould, in equal parts. The decayed part of the leaves should also be cut away, and the plants may be placed in a greenhouse, or some place perfectly secured from frost; and if there were a grapery, or moderate stove handy, they may be hastened perhaps, but it is not necessary. Unless the very hearts of the plants have been damaged, they will strike fresh roots, and start into healthy growth. If the mischief is discovered early enough in the spring, they will make a considerable progress during the summer, but it is better to keep them even then under cover for the first few weeks, although during the summer months they would do out of doors. They require the whole of the soil should be moistened, but not kept wet; nevertheless, if the draught is good, as it ought to be, and to succeed must be, they will not take much harm.

The Carnation and the Tulip.—There is a singular propensity to run to a self in all highly coloured Carnations, and to remain selfs several years; but there is much certainty of their coming back to the fine variegated character, in the same way as a breeder Tulip will break into fine colours. But the Carnation is unlike the Tulip, in first blooming well and variegated; whereas the Tulip rarely or ever blooms in any but the breeder, or self form. It has been said, by old Carnation growers, that they would sooner have some kinds after they have been recovered from selfs, than before they have gone back to such selfs. Cartwright's Rainbow is especially fine when it comes back from the run colour. It has, however, been very commonly the case, that run flowers, as they are called, are thrown away altogether. This is wrong, if the sort is at all weakly; for nothing is sooner lost than the stock of a variety that yields but little grass. It is a most extraordinary fact, that among many Tulips that have gone back to the breeder, and have broken again, they have proved finer than ever; and yet there is nothing upon which so much nonsense has been written, and so little sound information given, as the breaking of Tulips and the running of Carnations.

How ought Hollyhocks to be shown?—This question has been put by many of our readers, and it requires a qualified answer. While we are endeavouring to improve the flower, the great point is to increase the thickness of the petal; and, as this quality can be seen as well in a single bloom as in a spike, the better way will be to show the flowers singly, in stands, like Dahlias. But when this quality has been attained to a considerable extent and variety, the next grand point to be attained will be closeness of the flowers on the spike; and in this case the spikes should be shown, or a certain portion of the spike, say from three to five flowers on part of a stem, or it may be the whole spike; for, as a plant, the Hollyhock would be valued for the form of this, and therefore all the varieties might then be shown on their stems as they grow.



ACHIMENES ARGYROSTIGMA.

(*Hooker.*)

SILVER-SPOTTED ACHIMENES.

There are some plants admired for their fragrance, and others for their beauty; but, as far as we can yet judge, the present subject will rest its claims upon different qualities. It has no fragrance to boast of, neither is there any very striking beauty about the plant, but nevertheless it will not be without its admirers; and the qualities that will be admired are these:—its neat and pretty flowers; its dark green foliage, with silvery blotches; and the ease with which it may be cultivated. The plant has a short stem, furnished with opposite, elliptical, obtuse, downy leaves, of a deep velvety green, marked with scattered white spots. The flowers are produced in upright racemes from the axils of the upper leaves, generally three together, which rise eight or ten inches high, and produce flowers numerously, nearly throughout their whole length; they are small, whitish, with a deep stain of red on the outside of the tube, and mottled with red and yellow in the inside. The appearance of the flowers on their erect raceme, at a superficial glance, calls to mind the pretty little eyebright (Euphrasia officinalis) of our native flora. The plant generally forms a little tuft, and produces quite a cluster of these flower spikes, and, as they continue in bloom for a long time, throughout the summer months it maintains its interest; at the same time, its foliage alone will present the most permanent source of interest; for, under anything like cultivation, these, with their mottled surfaces, will appear very ornamental, and their beauty will, of course, continue throughout the year. This plant presents a striking contrast to all the other species of Achimenes introduced to our gardens: they are, with this exception, exceedingly gay, and, in the fullest sense, ornamental plants, producing flowers of large size or brilliant and attractive colour—and that, too, in the greatest profusion. Here we have a species of the same family, whose claims to attention are of a totally different character; the flowers are small, but, on close inspection, they will be found to be exceedingly pretty; and the leaves are covered with silvery spots, which, at all times, and under any circumstances of ordinary cultivation, have an interesting character.

We have seen plants of this novelty at Kew, and other places, during the summer; and a plant from the former establishment was exhibited at a recent meeting of the London Horticultural Society. In the "Botanical Magazine," where a figure is given from which our engraving is prepared, Sir

W. Hooker, the Director of the Gardens of Kew, remarks as follows:—"Among the many novelties sent by our collector for the Royal Botanic Gardens, from the Sierra Nivada de Santa Marta, in New Granada, is the accompanying highly interesting plant. The leaves are peculiarly beautiful, of a rich velvety dark green, with a tinge of purple, spotted with white, as in Begonia argyrostigma. We will not deny that (partly from the consciousness that the plant was a true Achimenes) very great expectations were raised as regards the beauty of its flowers. Their first appearance no doubt disappointed us; but as the racemes increased in length, and more blossoms expanded, the plant became a general favourite, and is likely to continue so; for the flowers bid fair to continue the whole summer months. They are white or cream colour, spotted with red. The plant requires the same treatment as others of this family; and we find it best, after rearing it in a moist and hot stove, to remove it to a cooler place. Thus treated, the bloom and foliage continue in beauty a great length of time. It will be readily increased, we cannot doubt, by its scaly, caterpillar-like tubers, as is the case with the original Achimenes coccinea, of which this is unquestionably a true congener."

In cultivation, this plant will require similar treatment to the other members of the family now so widely dispersed, and contributing to ornament so many green-houses in the summer months, after having been grown in a warmer atmosphere. From its small size, and the permanent interest and beauty of its foliage, it is well suited for culture in a Wardian case.

PRACTICAL GARDENING.

OPERATIONS FOR OCTOBER.—THE FLOWER GARDEN AND SHRUBBERY.

This is the most important month in the year for all planting operations, and especially the removal of all deciduous shrubs and trees. Vegetation, in their case, has done its work; the leaf falls, and although from that period until the time that the buds begin to swell will answer every purpose, if there be one month better, it shall be October. All alterations of the flower-garden and shrubbery should therefore be commenced, and the trees and shrubs of any important size be selected and marked ready to be taken up when required, and not before. The evergreens may be left later without any prejudice to their well-doing. The first step towards forming or altering a garden, is, that of marking out the edges of walks, and the margins of beds; and the next is, the trenching, as deep as the soil will allow of it, all the portions to be used as beds, or planted with shrubs and trees. As the autumn months are frequently very wet, and intervals only will do for the principal operations, no opportunity of working should be lost in fine weather. The ground works more freely, and is in better order after it is worked, than if done while it is wet; for, as the digging admits a good deal of air into the soil, as deep as it is disturbed, solid lumps of earth, and especially in stiff land, trodden together, and turned in in that state, become hardened; and it is long before repeated diggings can pulverize it, and render it fit for the reception of plants. The spaces to be planted having been trenched, order home, or procure from other parts of your garden, the trees and shrubs required. If from a nursery of standing, they need no caution about taking up; but if, on the other hand, you find rough labourers about, show them the necessity of retaining all the fibres of the roots undamaged, and pay them a little extra for taking pains. The planting of all kinds of subjects requires pretty nearly the same care. Dig the holes large enough to take the roots spread out, and let the loosened earth at the bottom rather form a cone, than be deepest in the middle, which is so common an error, that, unless seen time after time, as we have seen it, one can hardly believe it. Trees properly managed in the nursery, have not tap roots, but fibres spreading all round; and if they be not so, the buyer loses great advantage. Indeed, so important is it to have what the gardener technically calls good stuff,—that is, trees with well-formed roots,—that we recommend all purchasers of full-sized plants of any kind, to go and select two or three of the finest plants, and have them taken up, to see the nature of their roots, before they order any quantity; for better is it to get a three-feet high plant, with well-formed roots, than equally handsome ones of six feet, where the roots have been neglected; the one starts and becomes handsome in a year, the other is checked so much by the unavoidable loss of its straggling feet, that it goes back rather than forward in appearance the first two or three seasons, even if it ever recover its mutilation. One necessary condition, however, of all planting, where the roots have been cut, or broken, is, that bruises, or ragged ends, and split or broken pieces, be removed with a sharp knife, and a clean cut; and another is, that the plant itself must be cut in, and curtailed of a proportionate quantity of head, to compensate for the loss of its nourishing roots. Still it is much better to render these precautions unnecessary, by selecting the plants at the best nurseries, where they naturally look to the importance of sound and good roots. The holes having been dug out the proper size, let the loose mould put in at the bottom be of such height as will keep the collar of the plant exactly where it was in its own soil, or rather higher than lower; for there is hardly anything so fatal as deep planting, that is, placing the roots too far beneath the surface. Hold the plant in its proper position, and spread the roots round. The mould is to be thrown in, and you must move the head of the plant forwards and backwards, every way, to let the earth work in among the roots; and if it do not go in well, use a blunt stick to poke it in among them; then keeping it steady in its proper position, tread gently, and fill up level, when it should be trod harder, and a stake placed against it, or three, if necessary, forming angular props to hold it firmly; for if the wind be allowed to remove them, even but little, it disturbs or breaks off all the fine fibres of the root you have so recently trod hard into the ground. Low shrubs, or very dwarf plants of any kind, may be left to their chance; for, unless the wind be very rough indeed, it passes over them without disturbing their roots. With regard to the plan of planting, much has already been said in other papers contained in this volume; but, as a general rule for good effect, the main feature should be composed of evergreens; and deciduous plants should be then placed so as not to interfere with the fresh appearance. Gardens ought to look green at Christmas, and the different varieties of foliage form such beautiful contrasts, that nature, unaided, never produced on one spot, simply because our rich stores of evergreens are gathered from all parts of the world, and present us with almost endless variety of habits, forms, textures, and shades. The art and taste of the gardener must be displayed in the mode of disposing them to advantage. Dark greens with light, common with variegated, the light and elegant with the rich and bold; the tall ones in the back-ground, and the shorter more forward, while the dwarfs form the front. But it is not enough to observe the present state of the plants; regard must be had to the particular habit of everything, otherwise you will find all your intentions frustrated. It would be of no avail to place the most handsomely-formed dwarf plants of laurel in front, for they will get up beyond all the dwarf-habited plants in a season. Slow-growing subjects are years doing what some would do in one year's growth. Firs grow rapidly, Cedars slowly; Laurel grows fast, Holly not so fast; Rhododendrons, Kalmias, and Andromedas, form very beautiful subjects for the foreground; and standard Thorns, Almonds, Laburnums, Guilder Roses, double-flowering Cherries, and Pyrus spectabilis, form rich and appropriate heads of bloom above the evergreen foliage; and the Pyrus Japonica, which is now more generally grown as a shrub, though easily trimmed up to a standard, is admirable to alternate with the different varieties of deciduous Azalea, as choice dwarf subjects, interspersed in the forward part of the borders, to the mass of evergreen which forms the chief feature of the place. All these operations should be, we repeat, commenced as soon as convenient, because there are, and must be, interruptions which cannot be foreseen; for there will come, occasionally, after September, continued wet for days together, rendering the ground unfit; for better had work stand still for weeks, than the ground be trampled on in a wet state. Commence your work, then, early, by at once pegging out all your proposed alterations or original plans, and then take all favourable opportunities of progressing in fine weather, and when the ground is in good order, select your shrubs, plants, and trees, as soon as you please; and have none taken up until you are ready for them. With a prospect of fine weather before you, have the dwarf plants taken up first, and begin all the foreground of your plans. We have heard people contend, and, indeed, have seen people write against flower-borders in front of shrubs. This is idle nonsense: there should always be a border of soil in front, two or three feet at the least. It is a preposterous doctrine (though laid down by those who have been considered authorities) that there is any impropriety in having flowers at the foot of trees; and a few brilliant subjects, with their evergreen back ground, give life and animation to a scene. Therefore begin planting your evergreen shrubs at such distance from the front as you intend the border to be deep; in large concerns four to six feet; in small ones two to three. This first or front row should comprise slow-growing kinds, which naturally keep feathered or furnished to the ground, and such as will bear clipping. The Kalmia latifolia, well grown, is an excellent plant for this, and must be selected short, bushy, and healthy. They will have good balls of peat to their roots; but wherever you plant one dig out the hole too large, and mix half peat and half the soil that you take out to fill up the hole with. Slow-growing Hollies, which may be kept close down for years, and are the better for the knife, will be found well contrasted and useful to diversify the colours; for they may be had dark green, light green, shiny, and opaque, and variegated with white or yellow margins or middles. Rhododendron catawbiense is another highly useful front plant; and to be kept short, cut off the ends of the branches that make any very vigorous effort at growth. Cotoneasters, Evergreen varieties and species of Berberis, (or Mahonia,) Garrya elliptica, and Laurustinus, will render these front rows very pretty and varied. These should be three to five feet apart, according to the magnitude of the place. The next row should be planted at the intervals, two or three feet farther back, and might be composed of Hollies, Arbutus, Arbor Vitæs, Magnolias, Portugal Laurels, Box, Alaturnus, Acuba Japonicas, Broom, Junipers, and Yews, all of them a foot or two taller than those in front. These form a back-ground, seen between those in front. A third row may be planted exactly behind the front ones, and may consist of the various Pinuses, larger Hollies, large shrubs of any kind, common Laurels, any subjects which grow fast. Here then is a mass of Evergreens, and sufficiently distant from each other to enable you to plant deciduous shrubs and trees behind each; but they ought to be standards, and their heads well above the green foliage of the others. Although we have mentioned the front row, there is yet a border before them; and, at intervals of some distance from each other, may be planted Azaleas, Daphnes, and Pyrus Japonicas, but not enough to form a row, merely sufficient to give a little bloom in spring among the border flowers. Respecting the verges of these clumps and beds, they are more in character when composed of turf twelve inches wide at the sides of a road; and, where the beds or borders are on a lawn, the grass itself forms the edging as far as it goes, so that, in fact, where the road is next the border, twelve inches wide of grass is necessary; but when the road is not near it, the border seems cut out of the lawn. When the flower garden and shrubbery is without any lawn, Gentianella is the best edging for wide edges, and box for narrow ones; and box edgings made well at first, last for many years with only common attention. As these form a very important feature in flower gardens, we will give directions for making them.

Box Edging.—To make a box edging, nothing more is requisite than to make a firm bank, with the top edge perfectly level, to cut the figure of the bed accurately, whether it be circular or square, or otherwise; for on this depends the success. Having prepared the edge of the bed like a sloping bank, and thrown the mould (or, if a walk, the gravel) well out of the way, the box must be thinned by pulling it to pieces, or parting it, so that there be some root on all of the pieces; if the rooted part is too long, it must, or should, be shortened, and the tops trimmed pretty square. Lay these pieces side by side, with the tips about an inch clear above the square edge at top, and adjusting them as you go on by banking them in their places; when all is done, lay the path level with the border, for such it should be next the box; and the paths should rise in the middle.

To make Dutch or Geometrical Gardens.—The ground must be levelled all over, and rolled with a heavy roller; the figure must then be drawn so that the marks enable you to cut all the edges of the beds like a sloping bank, and throw the mould to the middle of the intended walks. Plant your box as directed, and merely bank it into its place; remove a sufficient quantity of mould from the paths to enable you to gravel it well, and let the gravel cover all the mould that is on the roots of the box, because the soil one side the box and the gravel on the other ought to form a strong contrast, which can only be made by both being unmixed with each other.

Tender Plants.—Take up all the tender plants not yet taken care of, and that may be wanted, such as Verbenas, Petunias, Geraniums, Fuchsias, &c., if not already done as directed last month.

Dahlias should be lifted, and dried in the houses, stems downwards, in which state they should be stored, that any moisture which may be in the stem should drain out, instead of lodge, and rot the crown, than which nothing is more likely if this be neglected. It is only necessary to keep the tubers from frost, wet, and excessive heat; but from the time they are taken up, they should always be kept stems downwards, or at least so much on one side as to enable all moisture to run away from, instead of towards, the crown of the tuber. Whether they are kept in a green-house, under the stage—which is a good place, or in boxes, covered up with straw, or pitted, like potatoes, or in a common room in a dwelling-house, or hanging up in a kitchen, matters not, so that the place be not hot enough to shrivel up the tubers, nor wet enough to rot them, nor cold enough to freeze them. Seedling Dahlias that are small should be packed in sand; and cuttings, struck, but formed into very small tubers, should be left in their pots, or fresh potted, and kept in them till they start in the spring. If they have not done growing, and not died down, it is better to keep them in the green-house growing as long as you can. As a precaution against the labels being lost, or detached from the tubers, by which the value for a season is gone, you should fasten all on with wire before you put them away; indeed it is better to use the wire at once when you take up the tubers, and fasten proper labels on at once.

TULIP BEDS should be emptied of their soil pretty early, and by this time, by constant turning and watching for enemies at each operation, the mould will have become sweetened, and the wireworm, grub, or other enemy, will have disappeared. The bed should be two feet cleared out; and now, after giving about two inches thick of decayed dung all over the bottom, the soil may be crumbled in, and the whole left in its place, in the form of a high ridge, to settle down. At planting time,—which may be any time this month, or next, but we prefer the present, the superfluous soil may be taken off with the spade, and the bed levelled (so as to allow of four inches being placed on the top of the bulbs), and the top smoothed with a fine rake. This enables us to make the marks to guide the planting; and the proper mode of doing this, is to draw a mark the length of the bed down the centre, by stretching the garden line in the right place, and then with the back of the rake pressing it into the soil, so as to leave its mark, which is necessarily straight; then remove it six inches at a time, and make three lines of each side of the centre; this makes seven straight marks down the length of the bed. The cross marks may be made with a piece of straight stick, or a rod, which will reach from side to side, and two persons, one on each side, make these marks by measuring the places, six inches apart, all down the bed; and when they have adjusted the rod, press it a little; then the bed is made ready to receive the bulbs, which are then placed in from the boxes in which they have been arranged, exactly in the same positions; press the bulbs a little into the soil, so as to make them stand upright, and cover them with four inches of soil on the sides of the bed, and six inches in the centre, which, after rain, will settle down to three inches on the side, and five in the centre. The best way to earth, without disturbing the bulbs, is to cover each bulb first with a cone of earth, which prevents them falling on one side while the remainder is thrown on; and to adjust the height, it is usual to drive small stakes into the bed, at different places, the exact height the soil is to be left, and these enable you to adjust it properly the whole length, otherwise it is easy to be deceived as to the height you get the soil above the bulbs in different parts. In planting the off-sets, which really should be in the ground this month, as soon as they can be attended to, you have only to draw the lines along the bed, and taking one sort at a time, the label should be placed in the ground on the mark first, then the smallest of the off-sets moderately close together; as they enlarge, give more room; but three inches will be wide enough for the largest. The intention in planting the smallest next the label is that the failures are most apt to take place among the smallest, and there is the less chance of a mistake, by keeping the irregular portions nearest to the mark. When you have finished one sort, with the largest bulbs at the end, take a second, and place the stake or label in first, as in the last case, and, following up the same directions all through the bed, there may at length be a ridge of earth carefully laid all along each row by hand, when the remainder of the covering can be done as directed for the last. The best soil that a Tulip ever grows in, or can grow in, is rotted turfs from a loamy meadow. Cut them four or six inches thick, and lay them in a heap, until they have formed into mould, when they should be chopped down, and the wireworms, and other destructive insects, searched for, and removed; for, in the first instance, they are generally abundant, and no pains ought to be spared to get rid of them. We have known them found partially, year after year, in the soil of Tulip beds, which induces us to direct that, when it is turned out of a bed in ridges of each side, it should be searched several times. The object in putting cowdung at the bottom of a bed, is to stop the roots going into any hungry stuff that may be below two feet; for when they reach the dung they no longer grow downwards; they have been known to completely mat the cowdung with their fibres, by spreading, and this is generally towards the end of their bloom, and when the root is making its best growth. The practice of planting in sand is not beneficial to the roots; but it is useful in taking up the bulbs, if neglected too long, and the stalks have decayed; for, as you lose your principal guide, the stems and leaves, the sand shows you where the bulbs ought to be, and tells you at once whether they have decayed; because if you get at the sand, you are sure the tulip, if alive, ought to be there. The way to use the sand, is to drop some on every spot where the bulb is to stand, and after you have placed the bulb on it, put a cone of sand over it. Breeder Tulips should be planted in the open ground, and it is always better to keep the off-sets about them; for if a flower breaks well, it is very desirable to have a few of the kind, known to be the same; for breeders from the same seed often come so nearly alike in the foliage, as to be taken, when out of bloom, for the same variety. Early Tulips may be potted, or planted in the borders, as soon as you please; but let them be half-a-dozen in a patch, for effect, and not be planted about singly, as is the common practice.

AURICULAS, already in their winter quarters, require but little care, beyond protecting them from hot sun and excessive rains; for now they require no water for weeks together, being in a state of comparative rest; but they must not be allowed to flag. As any of the leaves turn yellow, take them off; for when allowed to rot on the plant, they will sometimes carry their damp, and consequent decay, to the collar of the plant itself. Seedlings, and particularly small ones, require some watching, and occasional watering, because they have not such firm hold of the ground as larger plants, though when in good sized seed-pans, there is a body of earth, which is far preferable to a small pot, to depend on. Seedlings, potted off into small sized pots, must be more frequently watered than the large plants, because they dry so much sooner. The glasses of the frames should never be on in mild weather; but when the north and east wind prevails, the air does them but little service. Let the glasses of frames be always clean, and guard against the drip, which easily shows itself, if you look through the stock, and examine the soil in the pots. The drip not only makes a pot wet and heavy; but wherever wet drips, it forms a hole, which shows plainly enough what is the matter. A healthy plant, subject a week or two to the constant wet soil, will exhibit symptoms of bad health, and may be past recovery, among careless people, before they discover the cause. If the stock of Auriculas have not undergone the treatment recommended last month, the sooner these directions are attended to the better.

ROSES have, for the most part, done their work, and are dropping, or have dropped, their leaves; the heads having made large growth, hold the wind so much, that some of the autumn breezes would break half of them away from their fastenings. When the shoots have been extravagantly long, they may be shortened; and when too many have been grown, they should be thinned out by cutting the weaker branches clean away to the bottom. This lessens the power of the head to catch the wind; but all the stakes and ties should be examined, to see that they are strong, and capable of holding them in their positions. Whenever you have tender kinds in standards out of doors, take them up, and lay them in by the heels, in some shed, or outhouse, and cover the heads with loose litter. Some object to removing them at all. These should first trim in the wild branches of the heads a little, to make them a manageable size, and then, having stuffed some hay among the branches, draw them in as close as may be with ties of some kind, and then wind haybands round the outside of the previously drawn in head. This, however, is not proof against a hard winter, without one more precaution. A waterproof calico, which may be had cheaply enough now, may be tied over the head, to keep the wet from sodding the hay, which it otherwise will do, and a hard frost succeeding, will form the whole into a mass of ice. The waterproof bag, to cover the head, will keep all perfectly dry, and scarcely any degree of frost will touch it. We have seen people put haybands round the stocks of Roses; but if the stocks be the common Brier, it is a very useless proceeding, as the stock is by no means tender, and, as may be seen from our hedges in the hardest winter, it is capable of standing our most severe frosts. Dwarf varieties, of the China and smooth-wooded kinds, are generally more tender than the garden deciduous Roses, and are better, perhaps, potted up for the winter, and protected somehow, placed in an outhouse, or in the dwelling-house, or in pits and frames, or in holes dug in the ground, and covered over, or plunged in the ground in their pots, and covered with hoops and mats; or loose litter, such as peas haulm, may be packed between the plants, and on them. This can only be kept in its position against high winds, by driving a few stakes round the bed, and between the pots, as high as the plants; the peas haulm will remain then in spite of a high wind.

PANSIES.—Seedlings are blooming all this month, and perhaps up to Christmas, if there are no hard frosts. Let no dependence be placed on their present appearance. If you have any named favourites throwing out occasional blooms, see how different they will appear from the same flowers in condition; generally speaking, they come out of colour, and even out of form, and this will give some idea of how unsafe it would be to throw away seedlings in autumn from the appearance of the first blooms. Struck cuttings and plants, that have gained a little strength, may both be potted in large sixty-sized pots, to be protected in frames. Let them have good loam and dung, and the pots be well drained; those which are intended for pot culture may be shifted, from time to time, from small to larger pots, and eventually into size sixteen, or at least large twenty-fours, as they require plenty of room to bloom strong. Those now potted off may be treated nearly the same as Carnations and Piccotees, Auriculas, &c., so far as air is concerned, but they must be kept properly moistened with occasional waterings, as they may grow all the winter, unless you wish to confine them in small pots, for the convenience of stowage, and spring planting out, in which case they may be kept more short of water than when wanted for pot culture, because in the one case you want to keep them small, in the other, you want to push them gently for spring blooming.

Chrysanthemums, in pots, should be placed where they are to flower, whether it be in the dwelling-house, green-house, conservatory, or open air; but if they are to run the chances of the open air, let the pots be plunged, as it saves the roots. Cut down any that have declined flowering, and remove the bloom stalks of any that have had their blooms cut off by frost. The potted ones in the houses must be watered from time to time, as the swelling blooms exhaust the moisture rapidly, and any want of it at this period will stint the bloom.

Bulbous Roots, in all their variety, may be planted in the beds and borders all this month, and even next; but some taste and discretion are required in the disposition of them, according to colour and height. As we have elsewhere recommended, Snowdrops, Crocuses, Narcissuses, Jonquils, early Tulips, Hyacinths, and other bulbous-rooted flowers, should be in masses, not spread out singly, or in rows, but in good bold patches, showing a head of bloom ten times more conspicuously, although more distant. The Snowdrops, Crocuses, and Vanthol Tulips, which are very dwarf, may be close to the front. Jonquils, Narcissuses, Hyacinths, and tall early Tulips, &c., may be a foot further back; and Crown Imperials, many of the Lilies, and other taller subjects, yet more behind. Bulbs in glasses may be brought out from their dark abodes, a few at a time, to be bloomed in the house, or in hot-beds, according as they are wanted.

Early Spring Flowers, such as Hepaticas, Violets, Primroses, Polyanthuses, Cyclamens, Ranunculuses, Anemones, and various other subjects which are gay, in the first fine weather of the year, should be planted in appropriate situations in the beds and borders. Not even the Wallflower, common as it is, must be neglected; for its absence from the spring flowers would be a loss. And while disposing of these for the first part of the flower season, leave room for later varieties, equally welcome in their turn, such as Rockets, Sweet Williams, the dwarf and tall Phloxes, Flags, Irises, the scarlet and white Lychnises, Delphiniums, Anterrhinums, and other hardy perennials, must all have their places, and the finishing of their borders and beds, before the close of the year, gives them a much more cheerful appearance during the winter months.

Perennials, if not already parted, should be now looked to. If they are standing where they are wanted, and merely too large, or increase is wanted, cut off portions with the spade, on the side it can be best spared, as we have already directed, and plant the detatched pieces where they are most wanted.

Hyacinths. — There is a pot made by most of the potters expressly for Hyacinths, and other bulbs may be advantageously grown in them. They are nearly twice the length of ordinary pots; and those who observe the growth of the Hyacinth roots in glass, will have seen the disposition to go down rapidly. These pots are resorted to when growing for exhibition is contemplated; and it is astonishing sometimes to see with what strength they can be flowered by the means which these vessels afford. The drainage of crocks should be from one to two inches thick; upon this a little moss may be placed, and two to three inches of cow-dung, well rotted, are necessary. The soil, which should be for this purpose, coarse but clean sand, loam, and cow-dung, in equal parts, must be put in to fill up to within one inch of the top. The bulb may be gently pressed into the soil, and the pot filled up to the edge, which will leave a little of the bulb exposed. The pots must then be plunged to the brim in the earth, and four inches of clean sand be put on them; there they must remain until the period for setting them growing arrives. Then take out the number required, and let them have the light, and if for forcing, heat also; but most shows are so arranged as to leave this to out-of-door growth, and therefore they need only be taken out, the sand swept or taken away, and the pots replunged again, so that hoops and mats, or cloths, can be used to protect them, in the event of frost. They require to be kept moist, and will make strong growth; but, at present, the only object is to procure the bulbs, and pot them.

Double Primroses and Polyanthuses will be better kept out in an exposed bed, with loose litter thrown over them on the approach of frost, than they will in pots; but as some are always kept in pots, for the purpose of moving about when in bloom, let them be kept moist, and no more, and free from slugs, the very worst of all enemies to this tribe of plants. They should have all the air that can be given; and dead leaves should be removed as they appear. If loose or light litter cannot be procured for those in the out-beds, hoops, rather close down upon the plants, and mats thrown over when frosts are expected, will answer the purpose, but litter is the least trouble, and if not always removed, keeps away but little air and light. In all other matters, look to the directions for last month, and do even late what you cannot longer have an opportunity of doing early.

STOVE AND ORCHIDEOUS HOUSE.

Independently of the use of the stove for the plants which particularly belong to it, the time has arrived when we require it for forcing the numerous flowers, bulbs, and plants, required to keep up the beauty of the conservatory. American plants, such as Kalmias, Rhododendrons, Azaleas, and Andromedas, the Deutzia Scabra, Siberian and Persian Lilacs, Ribes sanguinea and varieties, Daphnes, Azalea Indica, Cacti, Roses of all kinds, and many other plants, which it is desirable to obtain early in flower. Pinks, Stocks, double Wallflowers, and bulbs of every description, should be brought in and placed in the coolest part of the house; a row of pots on the ground, wherever there is room, will take no harm till they begin to grow, when they must be placed nearer the light. All these things must be brought in a few at a time only, because you will require a succession. We should begin with not more than a couple each, and when these have fairly started, and are beginning to open their buds, bring in another lot, and so on all through the winter. While they are growing they will require a good deal of water, which ought to be kept always in the house, that its temperature may be the same as the atmosphere, otherwise it may give a chill that would cramp or stunt the plant and flower too. If any of the stove plants require shifting, let them be shifted at once; and, as a general rule, those plants which are making growth must be occasionally watered, and those which are not, must be kept pretty free from moisture, except just enough to keep them from flagging. The orchideous plants, whether in the stove, or a house of their own, must be subject to the same treatment; if they are growing, they must be syringed, as usual; if not, they may be merely kept from drying. The heat of the stove and orchideous house, in the centre, should not be less than 65° to 70° in the day, and 50° to 55° of a night. The plants in a temporary warm pit intended for the reception of subjects belonging to the hot-house, must be subject to the same treatment, so also must plants for forcing; and the heat ought to be the same, as nearly as it can be accomplished.

THE GREEN-HOUSE,

which, to most persons, is a sort of general receptacle during winter for all sorts of plants, should now have all its occupants in order; and where there are Geraniums, Heaths, Epacrises, Camellias, Acacias, Azaleas, &c., which are not all of the same nature, contrive to give plenty of room. The want of this is the bane of a green-house collection; where plants which require plenty of air are crowded, it is impossible to be healthy. The symptoms of suffering from being crowded, are the falling of the lower leaves, and the consequently bare branches, rendering the plant unsightly. The cause may be seen operating in plantations of hardy trees; and yet people crowd things infinitely more subject to the malady, and wonder why they are unhealthy, and bare at the bottom. It is simply the want of a better circulation of air among the plants at the lower part; no matter how large the green-house may be, the effect is produced by their being too close together. Look at a Fir-tree standing by itself, and you find its lower branches handsome, and reaching to the ground. Observe a thick plantation, and you find no branches near the ground, but so many poles standing together without even the colour or form of a leaf more than one-third down from the top. This is a lesson which should not be lost sight of in placing plants of any kind too close together. If the Geraniums and other plants requiring most attention were placed together, it would save the cultivator much trouble, and especially in the watering, for different plants require a good deal of very different treatment in this one respect. Generally there is danger in having any too wet; but the moisture that a Geranium would survive, would hurt a Camellia, and kill a Heath. Frequent waterings, and small applications, are bad; the wet never fairly goes through the soil; the proper way is to give a good soaking when you do it at all, and not to repeat it until it is wanted. By giving small quantities, one portion of the ball of earth gets wetted, while the other part is never reached. Hyacinths require to be merely grown before the out-of-door ones, may be placed in the green-house. Pots of cuttings may be placed on spare shelves, or any where out of the way, though we prefer pits for them. The fires should be lighted in green-houses in the day-time, for the temperature should not be raised at night if it can be avoided; sometimes, however, the change of weather renders it impossible to prevent it without danger of letting in the frost; and we must do the best we can. In mild weather the green-house should be kept very open, that the plants may have as much benefit as possible from the free air.

PITS AND FRAMES GENERALLY.

These store-houses, as it were, of the garden, are receptacles for everything not included in the subjects for other places, and frequently comprise in their contents fit plants for all the others but the stove, for which they cannot in general be made proper; but if the stove be crowded, and room cannot be made for tropical and other plants requiring heat, a pit must be made up for them. A common melon-frame can be made up for anything that requires over sixty degrees of heat, by merely applying dung, as if they were for Melons or

Cucumbers, and lining it from time to time, to keep up the necessary degree of temperature. In such a pit or frame as this, every kind of flower and plant that is not too large for it can be grown or forced during the winter; and instead of giving any peculiar instructions as to the subjects to be placed there, we must content ourselves by referring to the stove directions, and this must be made the substitute. Pits, or common melon-frames, can be made to answer the purpose of a green-house, if the ordinary green-house is insufficient to accommodate the plants that want its protection. In this case, all that is required is to keep frost out, and not to give any heat. To do this effectually, it is best to build up a wall of turfs outside the wood-work, to prevent the natural warmth of the earth inside from escaping, as it would do, through the wood unprotected. In a pit, or frame, thus fortified, any plant that will do well in a green-house could be protected through the winter; we mean such as Heaths, Epacrises, Camellias, Acacias, and such like; for Geraniums ought to have such a pit to themselves; because they, being succulent, are more susceptible of damage; and the confinement and general treatment that would be necessary for them, would injure the others, which, in fact, want nothing but protection against severe frosts, while Geraniums will suffer from a single degree of frost, and therefore cannot be trusted a single night without sufficient protection. Such pits or frames are best adapted also for keeping all the struck and unstruck cuttings of Verbenas, Hydrangeas, Petunias, China Roses, Calceolarias, Salvias, and other plants of the same nature,—far better, indeed, than the green-house; for so long as the frost does not reach them, they cannot be too cool. Cuttings recently taken off, and not struck root, should, in addition to being in the pit, have bell-glasses over them, and those glasses should be wiped inside whenever the damp accumulates. In taking up plants of the tender kind from the open ground, it is better to cut them in close than to let them be potted the full size; and therefore, on cutting them close, all the pieces that come off may as well be inserted in pots to chance their striking, late as it is; there can be no doubt of being able to make them root, if the ordinary pains be taken; but they may not be worth the trouble of doing more than placing them in pots with glasses over them.

CONSERVATORY.

This house will now be indebted, in a great measure, to the Chrysanthemums, which are now gaily flowering in all their varieties. Camellias, too, are throwing out straggling blooms, which, little as they bear in proportion to the plants, are all useful; remove, therefore, to the conservatory all the Camellia plants which are bursting their flowers; and in large collections there are sure to be plenty to aid a good deal in producing the required floral mass to give effect. Late flowering annuals may be made useful; the Cockscomb, the Egg plant, and late-flowering Stocks, all assist, while some green-house and stove plants perform their part well. The Corræa, in all its varieties, is now in flower, and the plant, well bloomed, forms a striking object, especially the new kinds, which bloom abundantly, and comprise many colours, white, orange, rose, red, green, and varied. Plenty of Fuchsias still have flowers on them. The Datura arborea, or Brugmansia suaveolens, raised from eyes this spring, should now be showing their protracted blooms, although many plants flower as early as June. The stove orchideous department ought still to furnish a supply; many of the rare and showy species are still in their prime, and in moderately conducted places are extremely useful at this period of the year. Cleanliness and neatness do much for the appearance of a conservatory, and must be attended to generally as before. Climbers which have done flowering are to be trimmed and tied, or fastened up, cutting away straggling branches out of place, and removing all decaying or falling leaves. Plants which are on the borders, regularly planted out, will here and there show extremely vigorous shoots; these must be curtailed; and such plants as are inclined to ramble and get out of form, must be pruned and kept in order. But such plants as set for bloom at the ends of all their branches, must be so pruned the instant they have done blooming, otherwise the bloom itself is lost by shortening the branch; look, for instance, at the Rhododendron, the Camellia Japonica, and hardy Azaleas, and such like plants; they must be trimmed as soon as they decline blowing, and before they make their season's growth; such pruning often makes a much more beautiful plant, and never should be neglected. Watering the plants is an operation to be carefully attended to, as they must not be kept too moist in autumn and winter. If the weather be fine, give plenty of air; and if cold, cheerless, and winterly, have occasional fires in the middle of the day, and open the sashes a little, as it lets the damp out; and when shut up again at night, there will be sufficient warmth in the house.

KITCHEN GARDEN.

Mushrooms, one of the luxuries of the kitchen garden, and produced with but little trouble and expense, are more neglected than almost any vegetable or fruit, which costs thrice the trouble, that is not thought so much of when produced; so simple is the culture of this useful fungus, that it is almost impossible to be so situated as not to produce them in plenty, and some idea may be formed of the necessary conditions, when we mention that a cupboard or cellar, in which a ray of light never appears, will yield them as plentifully, in proportion to the space occupied, as a market garden. What, then, are the conditions? Throw down a heap of short dung, the horse droppings; this will heat in a few days; if it become too hot, turn it a little and heap it up again; when there is a genial warmth, place all over it, about six inches apart, and tucking it in, so as to be even with the surface, pieces of mushroom spawn, about the size of a good walnut for pickling; upon this put about an inch thickness of mould in dry working order. If this is in a dark cupboard or cellar, it will need no covering; if it be in the open air, or under a shed open to the weather, it must be covered with straw all over, four or five inches thick; but, presuming the little bed to be on a cellar floor, or in some cupboard, you need not trouble yourself about it until mushrooms reward you for the gathering. Much has been said by a contemporary work about the necessity of light and heat to produce the mushroom. This theory is opposed to everything like practice and experience, and the writer must be very ignorant to put forth an opinion which nature, without the assistance of science and art, contradicts; some of the finest mushrooms, if size be an object, have been found in dark places. They have been known to force up stones in cellars, and come of an enormous size. We have had a rump-steak at the posting-house at Southall, and gone down into the dark cellar to gather the mushrooms that we ate with it. We have, in our time, paid for gathering horse droppings to rot for compost in a cellar intended to store potatoes in, and had an abundant and lasting crop without using spawn, some having been accidentally gathered with the dung; and though not totally devoid of light, have gathered large quantities from a heap consisting of half-a-dozen barrowfuls of droppings, formed as we have described under the closely-filled stage of a green-house. And lastly, with regard to the necessity of light, which our contemporary insists upon, we have gathered, for many months together, bushels of fine mushrooms from a bed made in a dry lean-to apartment formed along the back of a green-house, in which there was no light till the door was opened. We have spoken of the simple method which any cottager in the kingdom might adopt to produce this excellent fungus; of course those who grow on a large scale for market, must adopt a more methodical kind of structure. Some of them have regular mushroom houses, others grow them on the floors of vineries and pineries; some make a rule of laying sloping heaps of the manure and spawn against every wall in their sheds and out-houses, even under their binding and potting tables, because the wall is a support that keeps the stuff well together, and the straw that is laid over is not so much disturbed as if it were in the more open space. The mode of getting up a bed on a larger scale is this:—The ground is marked out, say six feet wide at the bottom, and as long as we choose; the short stable dung, the greater part of which is droppings, is laid together some time before use, and is prepared almost the same as if for a hot-bed, turned over, shaken out, and if getting too dry a heat, watered with a watering-pot until the warmth is pretty regular all over it; it is then spread over the space marked out, and every layer that goes on being smaller, a complete bank is formed, about four feet high; this is allowed to lie together, with some straw over it, until the heat appears well disseminated throughout the length. The spawn having been broken into pieces the size of a hen's egg, is tucked in just under the surface, in rows nine inches apart from the bottom to the top; good sifted loam is then put all over it an inch thick, and the whole is covered with straw. In a few weeks the mushrooms appear and continue coming all over the bed. The straw has to be removed for gathering, but is returned directly, as the bed is by that means preserved longer in good condition. As the Melon-beds and Cucumber-beds are now done with, the plants may be removed, the earth stirred up and reduced to an inch or rather more in thickness, and pieces of spawn placed from six to nine inches apart all over, just upon the dung; this may be shut up until there are symptoms of mushrooms, but the sun must be kept off with matting, or some other effectual shade. In short, wherever the spawn can find a medium to spread in, it will generate mushrooms; and though horse droppings are the most appropriate medium, the open border has been known to produce abundant crops, though the place was only dressed with an old mushroom-bed. Mushroom-houses are made now with broad shelves, one above another, on each side wall; on these shelves the droppings and spawn form a sloping heap from front to back, as high up the wall as it will lay well, and they are always bearing; but until the new doctrine was broached by some one who must have been totally ignorant of the nature and habit of the mushroom, nobody ever dreamed of light being essential; and we have been through scores of houses where there was no other light than came in at the doors when they were opened. Many grow mushrooms in a stove or hot-house, by nearly filling large sized pots with droppings, and putting a lump of spawn in each, with an inch of sifted mould at the top; and some wonderful productions upon this plan have been exhibited at shows, where these pots have been crowded to excess with splendid specimens, forming a head like a large cauliflower.

Celery.—Earthing up celery is a matter of course to be followed up from time to time, as the plants grow up, for the blanched portions only are eatable. This operation should be so managed that none of the earth falls into the heart of the plant. Those who are very choice in the cultivation of celery for exhibition, tie up every plant with bast matting as close as a lettuce, while they earth up and effectually guard against the earth falling in; and when they have finished earthing they untie the bast again, and release the plant. In the general culture this is not necessary, nor is it at all worth the trouble; but where all are trying their best, and every point is looked at, all things are done to make sure.

Cabbages.—Fill up all unoccupied places in the ground not wanted for anything else with cabbage-plants; let them be planted very close in the row, and the rows about eighteen inches apart. They will be large enough to eat as greens in a few weeks, and when other green vegetables may not be plentiful, when, by drawing two out of every three, the others will have room to cabbage, and will come early if the winter and spring be at all mild. Small plants from the seed-bed may be put out, six inches only apart in the rows; and when those to be eaten as greens are drawn to the number of two out of every three, the remaining ones will be eighteen inches apart in the original rows, and the rows being the same distance from each other, there will be abundant room. Cabbage-stalks from all the places where the crop is done with should be planted very thick in almost any part of the ground where they will be out of the way, and they cannot be too close scarcely. They may or may not be useful for sprouts, which, when quickly grown, are excellent greens.

Salads, as we have frequently said before, ought to be provided according to the wants of the family. If the constant winter supply be required, all the sorts should be immediately sown and planted out; and towards the end of the month the sowing should be in a frame, so that the whole could be covered on an emergency. Lettuces of the hardier kinds, Radishes, small Salad, such as Mustard and Cress, Rape, and even Onions, may be sown on warm borders; but must not be depended on, although light litter will keep off an immense deal of mischief; the only real dependence is in a frame. A Melon or Cucumber-bed that has done its work may be appropriated with advantage to the raising of Salad. The small Salad may, however, be sown thickly in pots, and put in a green-house, or in the dwelling-house, or almost anywhere; the frames may be devoted to Lettuces, Onions, and Radishes, all sown together. The Radishes, being ready first, will, by the drawing from time to time, afford the means of thinning the Lettuces and Onions; besides which, if they are too much crowded, they must be thinned on purpose, and when taken out may be either thrown away, or planted to take their chance. Lettuces from the seed bed may be planted out six inches apart where a frame can be put over them in bad weather.

Cauliflowers.—Plant out under hand-glasses, five in a patch, taking the precaution to leave room for the hand-glass to be lifted off and placed between the patches when required; some, however, put the glasses nearly close, and keep a space the width of the row, so that the glasses are lifted on the blank row the whole length; we prefer leaving the width of a glass between them in the same row, and by having these rows six feet apart, room is left to have a good crop of something between the rows, which diversifies the crops, looks better, and leaves each independent. When planted out they should be gently watered and covered up for a day or two close; they may afterwards be tilted on the opposite side to the wind if cold, or taken off altogether in the day-time if mild; but they must be always covered of a night when there is the slightest probability of a frost; and, indeed, unless a man is on the spot to take advantage of every change, it is better to close them down at sunset. The plants which have been pricked out from the seed-bed will require some kind of protection; hoops and mats are used as a sort of make-shift, but there is a risk attending them; nothing is so good as a common frame and light placed over them; for it is as essential to keep off excess of wet as severe cold, and this can only be done with glass, or its substitute, transparent waterproof covering. If neither can be had, loose litter, such as peas haulm, may be tried, or hoops and mats. In hard winters they would not be of much use; but in mild ones, like the generality, they would go through very well indeed. All the plants in the seed-bed that have not already been pricked out should be completed now, and the place on which they are planted should be high and dry, or exceedingly well drained; for on this much more depends than most gardeners imagine. As a general direction, cauliflower plants, in any stage of growth, should have all the air that can conveniently be given them, due regard being had for the state of the weather.

BEANS.—A few hardy and early ones may be sown or planted for those who are fond of them. They may be either put in a small patch to be planted out from afterwards, or placed in three rows, six inches apart, to come up and remain there for bearing. It is an even chance whether the winter kill them or not; but those who are curious always think it worth running the chance, while others, who care little about them for their own eating, like the appearance of the crop, and therefore always have some, though one dressing for each of these seasons is enough.

PEAS.—Now that there are a number of early Peas which stand the weather pretty well, sow some of the most hardy, to come in for early crops. Let them be sown in drills drawn pretty deep, with the earth all drawn out on the side most exposed to north-east winds. If the drills can run easterly and westerly, the earth will form a bank on the northerly side; but we have been successful even in hard winters by putting the ground in complete ridges, and sowing the peas about half-way down the ridge on the south side. In some sheltered borders they may be sown without any regard to this, but such places are rare; warm borders generally are excellent in the absence of very severe frosts, but a less degree of frost will kill Peas grown there than would kill them in a more open space. Peas, to stand the winter, should be sown in poor ground, and, when they have got over their hard season, top-dress them with good rotten dung, or give them liquid manure. We are of course treating of Peas in a private establishment, and not of growing for market; but it is worth knowing, or rather worth considering, that all tender, or pretty tender subjects, will stand more frost in poor than in rich ground, and therefore that ground not dressed is preferable to any that is rich and exciting. This is frequently seen in the article Brocoli, which grows large and fine in rich ground, and is much handsomer for high cultivation; but last winter, severe as it was, injured that on rich ground, while the same sort, grown on poor land, escaped unhurt. We do not recommend people to grow Brocoli on poor land for market, but we should be very apt to pick out the poorest we had for all tender crops to go through the winter, and then to well dress, in any way, as soon as the worst weather was got over.

MANAGEMENT OF GROWING CROPS.—Some of the most important points to look to in the management of growing crops, are the thinning them to proper distances where they have been sown, by hoeing them out, cleaning from weeds, loosening the earth occasionally, earthing up the plants; the necessary watering, which should not be half so often done as it generally is, and much more effectually done when attempted; all these matters are as important as the sowing or planting the subjects.

WINTER SPINACH should be thinned out, so that the plants are eight or ten inches apart; for quickness of growth is one of the means by which the mildness of vegetables is secured; and unless these plants have room, they cannot grow half so fast nor so clean. As the lower leaves come to a tolerably good size, they ought to be picked off singly for use, leaving those not full grown to advance for picking in their turn. Many use the rounded leaf Spinach, sown for spring and summer use, instead of the proper winter kind, and pick off the leaves in the same way, but it is much more likely to run to seed, and therefore does not answer always so well.

POTATOES not already up and stored should be dug and planted in security against frosts as soon as possible. Those who have good dry cellarage, and plenty of room, should let them lie thin on the ground, or if laid in heaps, they must be frequently turned over. There are many potatoes which would eat strong and watery when first taken up, or even when first taken from a pit after being covered up, that would be dry, and finely flavoured, if allowed to evaporate some of their moisture. This renders it quite necessary that ripe potatoes, for the constant supply of a family, should be placed very dry, and where neither wet nor frosts can reach them. Large quantities, however, cannot be thus provided for, and must be pitted. In this case, when intended for use, they should be taken out a fortnight, or even a month, before they are used.

MANAGEMENT OF GROUND.—Dress and dig, or trench, all the unoccupied ground that crops have been cleared from, and leave it rough dug or in ridges, to get the benefit of the winter frosts, and be ready at all times for the spring crops.

HERB BEDS which are not to be disturbed, should be top-dressed with some rotten dung.

CARROTS, PARSNIPS, and BEET-ROOT, should be dug up and stored; the best medium for this is sand. By packing them close, with sand between them, they will keep better than by any other means, and this should be done where no air can reach them, and where they will be secured from frost and wet.

SAVOYS, which are very useful as winter greens, should be planted for the last crop at the beginning of the month, or, if the weather continue fine, the last planting may be protracted till the middle of the month at latest; they will cabbage by Christmas, and keep a long time eatable.

Endive may be blanched several ways; the oldest practice is to tie it up close like Cos Lettuces; another practice, where there is not too much of it, is to lay flat tiles upon it; a third, and in the season likely to be visited with frost, the best, is to cover with an inverted flower-pot, stopping the hole up with a cork, and even covered up with mould. Upon a ridge or bank sloping to the south, Endive may still be planted out. It is always best on a sloping bank, because it is impatient of wet, and grows the better for the hot sun. Some should be planted under a common garden frame and light, if a supply through winter be required.

The Common Potherbs may be potted off now for the purpose of forcing for winter use; these pots may be placed in a hot-bed or in the stove, as they are wanted; slips of all these herbs may be planted to strike root and form new beds.

Asparagus.—Cut down the haulm or stalks close to the surface of the ground, then take out the clearings of the alleys or paths between the beds, enough to lay over the bed two or three inches deep; but if the alleys be foul with weeds, dig them into the bottom, and take the first earth turned up to cover the surface of the bed with the necessary quantity. Asparagus may be forced in a common hot-bed; this should be prepared with stable dung and leaves, or dung alone, the same as it would be prepared for Cucumbers or Melons, and three inches of soil should be put on it; any time before the end of the month will be soon enough for this. The Asparagus roots to be placed on this bed must be three years old, and strong, healthy stuff; these are laid on the top of the mould, with their fibres spread out all round them, as close as they can be placed side by side; for, as the roots are only to be used one short season, they can hardly be too thick; they are to be covered three inches only at first, and most people who require long white stalks put three more on in a fortnight; we want no white stalk, and therefore put no more, but cut all the buds after they have grown four inches above the soil, when all can be eaten.

Look well to all last month's directions, and do anything that has been left undone.

FRUIT GARDEN.

Here the work begins with gathering such fruit as has not already been taken in doors, and as most of this is for keeping, you cannot be too careful, for very slight bruises will cause premature decay, beginning at the part bruised. The keeping of fruit has been the subject of much discussion, and we are left, after reading all, and hearing all that can be written or said, just as wise as we were before, for all that we could learn from it. Our own experience tells us that they are best kept, and most conveniently examined, when placed in racks, or shelves formed of bars, with straw under them and over them. We have tried sand, and packing in boxes and jars, and we have in no instance found the ripening process go on well, nor the fruits of good flavour. The evaporation of part of the moisture, which goes on when air is admitted, is unquestionably beneficial, and by comparison, after taking all the pains we could with all the different modes of keeping, convinced us that the flavour of fruit suffers considerably by excluding the air from it. We admit that the confined fruit was more plump, but nobody would believe they were the same fruit, and off the same tree as those kept openly in the fruit room.

Vines, in a good season, have ripened some of their fruit, if not all; it would be well to hang glasses over the bunches, to protect them from frosts and wasps. Tack in the branches to prevent the wind from blowing them about, and avoid doing one of the most common but the most silly things in the whole process of grape growing. It is as common a practice as may be to pick off all the leaves in the vicinity of the bunches, to expose the said bunches to the sun. Now this does not hasten the ripening at all. If five or six leaves fall one over the other, some might be removed on one side to lessen their thickness, but taking leaves away deprives the plant and fruit of their nourishment, and does not hasten the ripening at all. The ends of any of the branches intended to bear next year, ought to be taken off at the beginning of the month, for it will hasten the ripening of the wood. Take off also any late shoots, for they can be good for nothing, and only weaken the vine.

Pruning hardly belongs to this month, unless the leaves have fallen, but towards the end of the month may be prepared for it; unless there be some good reason for hastening the operation, it is as well deferred awhile. Loosened branches may be nailed in their places, to prevent them being deranged, but the knife ought not to be used until the leaves have fallen.

Planting must also depend on the fall of the leaf. It is not advisable to disturb roots till they are themselves at rest, then there is no mischief done to the next season's growth. The ground may be prepared for it, by digging or trenching deep, and by well draining the portion to be planted.

New Fruit Trees.—Select, from some respectable nursery, such of the following fruits as may not already be in your collection, as nothing is more unprofitable and unsatisfactory than to grow fruits of second-rate quality, or if doubtful of any value. A tree to bear the finest fruit, takes no more room than one which bears a crab or a wild plum, and therefore there is no excuse for allowing an inferior subject to occupy a situation that might be better filled. Of the following fruits, there are none of even a secondary quality; they are, for the purposes of a family, all that can be wished, and such as we would not be without, if we could procure them, and make room for them.

Pears.—Louis Bon, Beurre Rouge, Brown Beurre, Jargonelle, Green Chissle, Bergamot (summer), Pas Colmar, Maria Louise, Williams' Bon Chrétien, Charmontel, Gansel's, Bergamot, Van Mons' Leon Le Clerc, Lansac, Golden Beurre, Swan's Egg and Crassanne. Many of these have half-a-score names, but all of them are well understood by the above.

Apples. — Franklin's Golden Pippin, Fearn's Pippin, Kerry Pippin, Alexander, Blenheim Orange, Ribstone Pippin, Nonpareil, Hawthornden, Royal Russett, Scarlet Nonpareil, Golden Harvey, Norfolk Beaufin, June-eating, French Crab, Court of Wick. Many others are recommended, but these should be had first.

Plums.—Greengage, Cant's late Greengage, Purple Morocco, Orleans, Chapman's Prince of Wales, Washington, Imperatrice, Magnum Bonum, Wine Sour, and Goliah; but Chapman's almost supersedes the Wine Sour as a preserving fruit, and Goliah as a dessert fruit.

Cherries.—May Duke, Kentish, Biggareau, Late Duke, Black Eagle, Florence, Morello, and Circassian.

Gooseberries. — Warrington, Wilmot's Early Red, Greengage, Champagne, Whitesmith, Golden Drop, Royal George, and White Dutch. All for flavour only, not size.

Peaches.—Early Avant, Early Newington, Red Magdalen, Royal George, Noblesse, and Old Newington.

Nectarines. — Elruge, Red Magdalen, Fanchild's Early, Temple's, Late Newington, and Red Roman.

Grapes for out of door culture.—Black Hamburg, Miller's Burgundy, Black Frontignac, Grizzly ditto, White Frontignac, White Muscadine, Esperione. Inferior to these for out of doors, but next in quality, are Black Prince, Black Muscadine, Claret Grape, Malmsey Muscadine, and White Sweetwater.

Strawberries.—Kean's Seedling, Elton Pine, Myatt's Pine, Queen Victoria, Swainstone's Early, and Alice Maude.

Raspberries.—Large Red Antwerp, Large White, Double-bearing, Large Yellow Antwerp, and Filby, afterwards sent out as a new one under the name of Fastolf.

Currants.—Large Red and Large New White Dutch.

Select all these, or such of them as you have not got, at the nursery, ready to be removed when you want them; for it is no use driving off the choice of your trees till the ground is ready. The principal art of planting trees and bushes is to take care there is plenty of depth for them, in good loamy soil; and if not, to prepare, before planting time, for their reception, by digging out holes, and removing the bad stuff to make room for good. But of this we shall say more next month. If you have any fruit border in which the trees are in bad health, examine it by digging down to the roots, removing the heavy wet stuff, and putting in good rotten turf; run a good drain all along the front edge of the border next the foot path, for that is essential. When these are old and sickly trees, cut out all but the most healthy wood, and prepare the space between the trees for the reception of the younger and better kinds.

Dig between Currant and Gooseberry bushes, and well clean the ground; and, if the leaf has fallen, you may begin pruning; but it is better to let the month go over, perhaps, than to begin now.

Cuttings of Gooseberry and Currant Trees may be taken off for propagation six inches long, and inserted four inches into the ground in a shady border. They must be cuttings of the present year's growth.

Strawberry Beds require to have all their runners and large yellow leaves cut off, and they should be dug in between the rows. There is no better dressing for any thing than the waste of its own growth. New beds or plantations may be made, but they ought not to have been delayed so long. A season is lost by the delay; for early runners, planted out in good time, will very often bear better the first year than afterwards. The runners should be a foot apart in the rows, and the rows two feet.

Raspberry Canes may be pruned, and, if the leaves are off, they may be removed, and planted also. There ought not to be more than three or four canes left standing at each stool, and these should be shortened down to four feet. Digging between the rows is good for them, whether they are pruned or not. We treat the next month, rather than the present, as the great operating period for fruit trees, and there is no reason for hastening the planting before the next month.

Look carefully in last month's operations, and do anything that has been neglected.

THE CALCEOLARIA.

ITS PROPERTIES AND CULTURE.

In no flower that we remember to have seen noticed, was the public getting more misled than in the Calceolaria; and had not the properties, as laid down by a celebrated raiser, been disputed, and, in fact, superseded, we should by this time have lost all the most beautiful character of the species.

It will be recollected that Mr. Green, the gardener of Lady and Sir E. Antrobus made a great advance in the size of this flower, and was in a fair way of carrying all before him. The judges at the Horticultural Society, captivated by the size of flowers, and unacquainted with those principles of Floriculture which are the foundation of improvement, gave prizes for the largest and best blooms, not only of named flowers, but seedlings also, and without reference to the habit of the plant; the consequence was, that Mr. Green's were always successful, where flowers, with better properties, were rejected. This led Mr. Green to deceive himself, and he actually ventured to give as the criterion of a good Calceolaria the very model of his own successful flowers. Now, according to the true principles of Floriculture, nothing about a plant should look ugly, meagre, or untidy. Turn a plant back, front, or sideways, it should look well, and nothing should be amiss. On looking at one of Mr. Green's models of perfection sideways, the plant exhibited neither shape nor make; the flowers looked flat, thin, and poor; the colour of the backs, which rather swelled out to prevent their being absolutely flat, were of a dull dirty colour, and the contrast between the front of the plant and the side, was as great as the front and side of a theatrical scene. Now a flower exhibiting such imperfections was anything but perfect, consequently it became high time to publish the perfection of the Calceolaria founded on true principles. This was accordingly done by Mr. Glenny, the well-known author of *The Properties of Flowers,* and the result was the abandonment of all other models, and the introduction of a superior class of flowers. Mr. Glenny's properties were as follows :—

"PROPERTIES OF THE CALCEOLARIA.

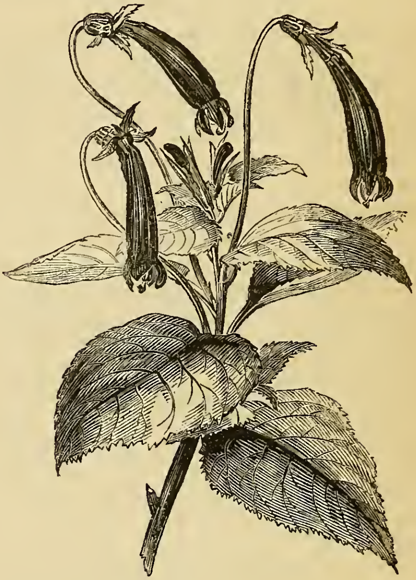
"The plant should be shrubby; the foliage thick and dark green; the habit bushy; the wood strong. The flower-stems should be short and strong; the foot-stalks of the blooms elastic, and branch well away from each other, to form a rich mass of flowers without crowding. The individual blooms depend entirely on the form of the purse, and it should be a perfect round hollow ball. The orifice and calyx cannot be too small, nor the flower too large. The colour should be very dense, and whether it be a spot in the middle, or stripes or blotches, should be bold and well defined, and the ground should be all one colour or shade, whether white, straw colour, sulphur, yellow, or any other. The colour of a self should be brilliant, and all over the same actual shade. Dark flowers with pale edges, or clouded or indefinite colours, are bad and unfit to show. The bloom should form one handsome bunch of pendant flowers, commencing where the foliage leaves off, and the flower-stems should not be seen between the foliage and the flowers, which should hang gracefully, and be close to each other; the branches of the flower-stems holding them out to form a handsome spreading surface."

Taking these properties for our guide, it is easy to perceive that if the flowers be perfectly round, and all over of the same ground colour, it will matter not which way you look at a plant; nobody can conceive a more beautiful object than a Calceolaria with perfectly globular blooms hanging gracefully down to the very foliage of the plant, and forming, as it were, a tree of flowers above the bush of green. Such plants may look better in front, but they will look well any how; and although it may not have been noticed, the more globular the blooms are, the less difference there is between the ground colour of the front and the back, whereas, in the flat flowers, the back of one of the brightest varieties looks dull and dirty. On this account we recommend those who intend growing Calceolarias to begin with a small stock of those in which they find the greatest approach to a globe, without minding either size or colour. The collection may be selected at almost any nursery round London, or near a provincial town. Few who live distant from a populous place find it worth while to grow these ephemeral and delicate subjects. Here select about three different coloured grounds, and as many different coloured blotches, but let them be the thickest flowers, free from the indentures or scollop marks on the edge, and grow them in a good rich bed of loam, and peat, and dung, in equal parts, in the open air, turning out the bulbs from the pot whole, and planting them without disturbing the root. Here, if it be a good season, you may hope to save seed in abundance; and, if you have no others in the garden, or near it, you may expect fine flowers from it when you have taken the trouble to sow and raise plants to bloom.

RAISING FROM SEED.

The seed of the Calceolaria is very small, and the pods should be taken off when turning yellow, and laid to dry in a large sheet of paper, under a hand-glass, that the wind may not disturb it. In the early spring this may be sown thinly in pans, well drained with crocks, and covered with a hand-glass, in the green-house, or under the glass of a garden-frame; when they have attained a sufficient size to handle, they may be picked out into other seed-pans, an inch apart, and allowed to grow until they are large enough to be in each other's way. They may then be potted in sixty-sized pots, and placed in a pit or frame, there to grow, under tolerably attentive management as to being kept neither dry nor wet. If the green-fly make its appearance, they must be fumigated with tobacco smoke, not too strongly, as it has been known to kill all the young shoots. The smoke must be too dense for a man to breathe in; but when the house is tolerably well filled, it must be left. If, on going into the house, the fly is seen lying about the surface of the soil, they may be syringed at once with clear lukewarm water, about as hot as it would get in a stove; use a fine rose for this, so that it may be applied with some force. If you have shelves near the top of the house that will hold all the plants, you may smoke them enough without leaving the house, as the smoke ascends, and will almost before your eyes disturb the whole community; and a good syringe immediately afterwards, with the fine rose directed straight to the plants, will go at once to the mischief, and wash the principal off. The plants must be examined afterwards to see that none of those which have fallen are alive; for they would soon return to the plant, which would be covered all over in an incredibly short time, only from a few scattered about the pot that may have recovered after the smoke has passed away. If the roots of the pot reach the sides, and begin to mat a little, they may be changed to size forty-eight; and if they should, after that, grow still stronger, they may be once more shifted to size thirty-two, in which they will bloom to great advantage; but few people care to grow seedlings very large until they have seen what kind of properties they possess. When they flower, which will be in spring, you must select your favourites, according as they approach the standard of perfection. They must be free from that indentation which is the ruling fault of many, and which is not tolerable under any circumstances. They must be round in front, and as much inflated as you can select them; not that you can get them as you like; but keep the form of a cherry in your mind, and the nearer they are like that the better. When you have selected your best, put them by themselves for seed. If there should be any very remarkable colour in an ill-shaped one, and it would be a desirable colour in a new and good-shaped one, let it be saved among the others, because, although it will operate against their form, it may give its character to a better form than its own, and so make an advance. The remainder, or discarded ones, may be planted in the borders, or beds, or thrown away, but the selected ones should be placed by themselves, far out of reach of bad ones; and if this cannot be done, it is better to throw all inferior ones away altogether rather than contaminate the seed of the good ones. It is the sowing of seeds among common ones that protracts the advancement of all flowers. Such is the tendency of flowers to go back to the worst, that there is hardly any tolerating a bad variety among a hundred good ones. The sorts which have been selected should be cut down, the earth in the pots stirred at top, and the loose earth thrown out to make room for fresh to be put in; earth them up, and set to grow. In the course of a short time, the plants will spread, and the earth being well up among the base of the leaves, side shoots will spring out, many of which will have roots, and may be easily separated from the parent plant. Other side shoots that spring out further up the plant will require to be detached as close as possible to the stem of the old one, that they may be planted in pots, to strike without losing the bottom joint; for, in fact, all the side shoots intended for cuttings should be taken when about six or eight leaves are visible, and they should then be taken as close to their base as possible, that their base may serve to strike from. The cutting up of the plant generally promotes lower shoots, which root while on the plant; the others must have the lower leaves carefully removed.

The rooted shoots may be potted at once, in pots adapted to their size; generally speaking, the sixty-sized pots are large enough. The lesser shoots, taken off the plant, must be placed in pots of loam and peat, with half an inch of sand at the top. This serves to wash down close to the cutting every time it is watered. The cuttings ought to be covered with a hand-glass, or rather a bell-glass, pressed into the ground to exclude air; here they may remain, in the shade, until they are struck, when they may be potted off, and treated like seedlings. But Calceolarias may be grown into specimen plants, as all outsized subjects are called; that is to say, the plant may be, after bloom, cut down, shifted into a pot a size larger, and grown until the roots touch the side, when it may have one more shift, and so long as the plant keeps growing, you encourage the side growth, instead of cutting it away, and propagating the plant. In this way Calceolarias may be grown until they will occupy peck pots, and form masses of plant and flower as large as gooseberry bushes. These specimen plants, however, have their evils. They are obliged to undergo a complete course of mechanical contrivance: every stem has to be supported by a stick, to prevent it from falling over, or drooping. The pot looks more like a piece of toy-work than a receptacle for a plant in the hand of a gardener; and in no instance has the flower been shown so good after cultivating in this extravagant manner, as when it depended for the beauty upon a single flower stem, and bloomed each individual flower in perfection. The only proper way to show the grace and elegance of this plant is to grow it strong, with a single heart, and a single truss of bloom. The single stem alone requires support if travelling, but will retain its character and beauty in the greenhouse without support. Here the actual value of a variety can be seen, because there is no distortion; as it grows its fate may be decided. The blooms ample, but not crowded, can develop their size and form, which they cannot when constrained into a mass by the force of wooden supports; for it is notorious that people who buy seedlings from their appearance as seedlings, are dreadfully annoyed and disappointed when they see the noble plants, as they are called, exhibited the next year with large quantities of flowers, which have lost both size and character, and with an immense bundle of sticks, which no improvement in the flower in the mass, or in the plant, can ever compensate for; they seem no longer plants, but artificial substitutes for plants. The flowers cannot come so large, nor be so well developed nor formed; they do not come to their colour and character. All these plants require great care in the wintering; damp affects them disadvantageously; therefore, if they are kept in pits, these pits must be dry at the bottom, and laid sloping, so that the wet from watering shall not soak into the ground, which, indeed, ought to be so made as not to admit of it. There are two kinds of Calceolaria, the herbaceous and the shrubby; but we do not recommend the herbaceous to be grown at all; they are by no means so handsome, nor so well adapted for show. In no one point do they approach the shrubby as plants, and nothing but their having, in the first instance, yielded larger flowers, obtained for them even the temporary popularity they enjoyed. It is true the Horticultural Society gave prizes expressly for herbaceous kinds, but in all places where Floriculture was understood, they were not at all encouraged, nor is it desirable they should even be treated of in a work devoted to better and more lasting beauties.



SIPHOCAMPYLUS COCCINEUS.

(*Hooker.*)

THE SCARLET-FLOWERED SIPHOCAMPYLUS.

This plant has been incidentally noticed on former occasions, but we are now enabled to give a sketch which will serve to convey an accurate idea of its appearance. It is altogether a dwarf-growing species, throwing up a tuft of numerous stems, which are suffruticose, or shrubby, at the base, but more succulent above; they grow erect, and bear alternate, broadly ovate leaves, which are doubly serrated and glabrous. The flowers are produced singly from the axils of several of the leaves towards the top of the stem; they are large, bright scarlet, two inches or more in length, and somewhat resembling some of the tube-flowered scarlet sages.

It is a stove plant, and has been introduced from the Organ Mountains of Brazil by the Messrs. Veitch, of Exeter, who have exhibited the plant at most of the principal London exhibitions during the season, where it has been highly rewarded and greatly admired. It appears to have first bloomed with Messrs. Veitch, in June of the present year.

It is probable that, as the plant becomes better known, it will succeed in a warm greenhouse; at least after it has been brought into growth in the spring. It should be potted into a moderately rich loamy soil, into pots of moderate size, well drained; and, like the allied species, will require a tolerably free supply of water, and hence the necessity of having the pots well drained, so as to prevent the stagnation of the moisture about the roots. In the winter season it should be kept at rest as much as possible, and again excited into growth in the spring.

From its continuing such a length of time in bloom, and the brilliant colour of its flowers, it will probably be found to be one of the most useful plants that have of late been introduced.

STOVE PLANTS FOR EXHIBITIONS, AND THEIR MANAGEMENT.

Of course Orchideous plants are not allowed to be exhibited in a class of this sort; and we must find, among the general collection, a few genera from which we can make a selection at proper times. For this purpose we have to look to various seasons of showing, and to the necessity of taking such as bear a good deal of flower, without any very coarse feature in the foliage. Let us commence with—

Ixora coccinea, splendid scarlet.
—— *alba*, white.
Euphorbia splendens, crimson.
———— *jacquiniflora*, scarlet.
Cuphea Melvilla, red and orange.
Amaryllis, in variety, red, white, pink striped.
Curcuma Roscoeana, rosy and yellow.
Gardenia grandiflora, white.
———— *radicans*, white.
Gesnera, varieties, red, orange, &c.
Gloxinia, varieties, purple, white, &c.
Poinsettia pulcherrima, crimson.
Rondeletia speciosa, orange and red.
Russellia juncea, scarlet.

From these there will always be a choice; and while some are rather difficult to manage, others will grow without any trouble. Among the most difficult, on many accounts, we may place the Ixoras, Russellia juncea, and Euphorbia jacquiniflora. They require as much watching as infants; they are subject to the mealy bug to such a degree (and particularly if there be any in the house), that twenty-four hours' neglect will spoil them. In speaking of the culture of stove-plants, there is little to direct for the one, that has not in some degree to be done for others, yet we may divide these into sections.

The GLOXINIAS and GESNERAS require the same treatment; they are grown from bulbs, as they are called, which should be potted in such sized pots as to leave half an inch of soil all round them at the top, and their bulbs should be potted in the soil, deep enough to make the largest part of it level with the surface. These may be grown in a compost of equal parts of loam, leaf-mould, and peat-earth, and they should not be changed until the pot is quite full of root, and it is matted all round the ball next the pot; for the object is to encourage bloom instead of foliage, which is sure to grow large enough; a half-inch shift then will be of use.

The next section we will take, will be the AMARYLLIS and CURCUMA ROSCOEANA. These require nothing but the most ordinary attention, and very little of it; when they begin to shoot, they must be watered occasionally, and they bloom as it may happen. It can be hastened for shows, by plunging the pots to the rim in the tan of the pit, and so that they do not want water, they can take no great harm.

The POINSETTIA is a rambling grower, and must not be allowed to grow three inches from its cutting before the eye, or growing bud, must be taken carefully out. If it is an old plant when you commence, cut it into the best form you can before it begins to grow, and recollect that, unless the branches are stopped, they grow to six or eight feet in length; therefore, that the only chance there is of growing a handsome bushy plant, is to begin with it from a cutting, or eye, and as soon as it has made two pair of leaves, or before the third pair has opened enough to allow it, pinch out the end of the shoot. Keep shifting the pots as fast as the old ones fill with roots, and when the plant has sent out side shoots, serve them the same, before they get longer than the first was, and so continue, till you have a handsome shaped plant, when all the shoots may make their full growth, and go to flower, which they do at the ends of the branches, the entire beauty of the plant, however, depending on its bracts, which surround a very curious bunch of insignificant bloom. The EUPHORBIAS, CUPHEA MELVILLA, and RONDELETIA SPECIOSA, all require much the same treatment, so far as the shortening or stopping of the joints, and the constant shifting from one pot to another, as soon as the old one is fairly filled with roots; for stove plants grow fast, and a little neglect will soon make a rambling plant. In shortening, or stopping the Euphorbias, it must be recollected that they bleed very much, therefore the smaller the wound, the less likely they are to die back. The Euphorbia jacquiniflora is very apt to die back a joint, unless the wound is confined to the merely taking out of the end bud as close as possible, without wounding the stem below it. In some plants it matters not how carelessly the end shoot may be pinched out, or off, only the joint on which the bud is will be lost; but in this, the Euphorbia jacquiniflora, the whole shoot will die back sometimes if it be carelessly done.

Russellia juncea stands alone in habit, peculiarity of growth, bloom, and necessary treatment, yet the early part of the management is not unlike some other matters. The plant is more like a delicate weeping broom than anything we can liken it to, only that the bloom is almost like a berberry in form and colour, but it comes out all along its weeping, thin, broom-like branches, the same as the yellow, pea-shaped blooms come out along the broom. Again, it differs in one other respect, because the plant cannot, with any ordinary management, be made a standard; it would, therefore, lose its character by the attempt; by taking off the top of a cutting, when struck, it would not only throw out side-shoots, but it would throw up suckers, and, in a short time, a tolerably large-sized pot would be filled with its roots, and when allowed to grow up, they would turn over the pot, and droop all round, hanging down several feet. The principal object is, to manage the growth so as to hang all round alike, and stand the pot on a pedestal, that its branches may hang uninterruptedly all round. It is no use attempting to force it into bloom; for, while it is inclined to grow, it should be indulged, it being a most beautiful object, even without a flower, and the larger the growth the more beautiful will it be, and the more abundant will the bloom be when it comes. The soil already mentioned will do for all these stove plants: the **Gardenia** and **Ixora** like plenty of heat, quick growth, and moisture. They both do best plunged in the tan to the rims of the pots they are in; the former might be better grown in a common hot-bed fitted for cucumbers than a stove at all; and we have covered them with a hand-glass in the stove, to keep them both hot and moist; they want nothing but hard growing, and scarcely even want stopping, for they grow naturally dwarf and bushy. The Ixoras require stopping several times, to bring them into a neat bushy shape; but they must be constantly watched, to protect them from vermin; for their young leaves and shoots are more susceptible of injury than any other plant we know of. They must be grown near the light, for the colour of the foliage is soon damaged; and unless this be a bright green the plant is not half so handsome. When the form is unobjectionable, which will, perhaps, be while the plant is moderate in size, it may be allowed to grow; that is, supposing there are a dozen or so branches in good order; for the bloom is small, but comes in close bunches at the ends of the branches, and the stronger and better it is grown the larger the bunches of flowers; for this reason it must never be stinted in the pots; but, as soon as the fibres come freely to the side of the pot, the plant must be shifted to a larger one; by these means there will always be some of the plants mentioned in flower, and there will be no difficulty in finding half-a-dozen during the show seasons.

ON FLORAL AND HORTICULTURAL SOCIETIES.

It is a question whether the leading Societies for the promotion of Floriculture have been founded and conducted on sufficiently liberal principles to obtain general fovour, and whether the spirit which induces a man to spend twenty pounds to get a ten-pound prize may not occasionally warp his judgment in the selection of proper objects for prizes. In examining the productions of many country shows, we have often observed what we should call injudicious prizes. Not that we would curtail the amount distributed in rewards of this kind, but that some prizes awarded to particular productions we should have given to others. We take it we are right in our notion that these Societies are to encourage the cultivation of useful or ornamental things. There are some points, then, to attend to in the making up of a schedule.

1. There should be some merit in the cultivation of any subject intended for a prize.
2. There should be some object in encouraging the cultivation of anything intended for a prize.
3. Any production, therefore, to entitle the grower to a prize should be above an average quality, owing to his superior culture.

Now, the first of these propositions shuts out a vast quantity of produce from country shows, because Apples, and Pears, and Plums, from standard trees, come without any particular merit of the growers, and are of a nature to prevent all new occupiers of allotments or gardens from competing with them. And if such things are produced from gentlemen's orchards, the merit of gathering and producing them is very limited indeed; yet have we seen at provincial shows many tables covered with this orchard fruit, which there was no merit in producing, and consequently no possible good could arise either to the science or the Society by the prizes awarded for such produce. The mere production of a Ribstone Pippin or an Alexander, or a Blenheim Orange, larger than a neighbour, does nothing for Horticulture. There are the trees: whoever by chance occupies the garden has them, and can produce the fruit; it fails in any and every good purpose to merely reward the casual occupier of a garden containing such trees. Then, again, as regards the shows themselves, what novelty is there in seeing common orchard fruit served up in dishes, when the neighbouring market shows them up in as many bushel baskets? So much for the first object, which we think is a failure everywhere.

The second proposition is, that there should be an object in encouraging the cultivation of anything intended for a prize, and herein consists the great value of Horticultural Societies. Now, the object may be the improvement of the subject itself, or it may be that the subject itself is a grand feature in a show. Let us take collections of flowering plants. The improved culture of plants in collection is an object which interests every gentleman who has a garden; and it is further an object always foremost in the mind of those interested in a show. Handsome prizes for collections of plants should invariably be the first to be secured, because, independent of the encouragement it holds out to the gardener to keep his houses in good order, it brings interesting subjects to the exhibition, such as cannot be seen at markets nor elsewhere on ordinary occasions. But it may be desirable to encourage the growth of anything not equally inviting to the company, but nevertheless interesting to horticulturists. Say, for instance, the growth of vegetables. Well, there are two ways of doing this: you may throw away pounds in giving something for the best Cabbage, something for the best Lettuce, something for the best Peas or Potatoes, all of which are individually very unimportant; whereas, if you give a series of prizes to the best collection of vegetables fit for table, there is, first, a general encouragement to be foremost in a garden, which is what the master requires, and, secondly, a particular encouragement to show off among his fellow gardeners; and the collections afford some interest. Again, in the article fruit,—that fruit which requires the gardener to use his knowledge, and assist nature, not mere orchard fruit,—encouragement may be wanted, and may advantageously be given; but let the prizes be for collections, and expel from the tables the ordinary rubbish with which the provincial dishes are crowded. Peaches, Nectarines, Pines, Grapes, and even Plums, may be admitted. But to see, as we have seen, single prizes awarded to scores of plates of fruit not worth half the prizes given, and when there was not the least merit, is to see money thrown away, and no good done. Why, it is as if the prizes were made as numerous as possible to give the possessors of general gardens an opportunity of taking a regular sweep. With regard to cottagers, let their prizes be for collections of vegetables, that is to say, useful vegetables,—Onions, Potatoes, Cabbages, Celery, Turnips, Parsnips, Carrots, and Leeks, those are the kind of productions the cottagers' friend takes delight in, and let the prizes go to those who can produce them best, and second best, and third best, and down to the tenth best, if necessary. Yet we see two single prizes for Potatoes, two for Cabbages, two for Carrots, two for Parsnips, and so on, through we know not how many, and fifty or sixty dishes of Potatoes (half-a-dozen, perhaps, by one man) are handed up to claim these single prizes. Onions the same; perhaps half-a-dozen of one man's; and other vegetables in proportion; so that, instead of getting the most useful selection of vegetables for his use, some more knowing cottager will bring forward as many sorts of Potatoes as he can get, and three or four sorts of Onions, merely to multiply his chances of prizes for these two articles. We would not allow a cottager to show more than one dish of anything for the competition, because the best grower could, by pulling up several dishes, sweep all away. In short, to be useful, the cottager's garden should be varied in crops; and, to encourage this, the prize should be for collections of vegetables; say not exceeding five sorts, or six sorts, and let the prizes be fair and numerous. The money would be much more judiciously distributed, than when a leviathan of a cottager, better off than his neighbour, perhaps, sweeps off the best prize for six or eight different things, not because they are first rate, but because there are no better.

This brings us to the third proposition, that any production, therefore, to entitle the grower to a prize, should be above an average quality, owing to his superior culture. It is one of the great evils of Horticultural Shows, that the great majority of the productions are not above the average quality, consequently, have in reality no business there. How to get rid of this evil we know not; but one great stride towards it, would be to throw open the shows to the public, instead of confining them to members. For the former would be to invite anybody who has a subject above the average quality, whereas the latter shuts out all who do not happen to be members, and as all the members together of a very large Society would be scarcely a hundredth part of the number of growers, the number of good things shut out is immense. Exclusiveness is the bane of Societies; from the moment it is introduced, a Society is lessened in efficiency. Liberality is the only principle which can succeed in the end, and whatever curtails it in the least degree is mischievous. Public exhibitions (under some trifling restriction) should be thrown open to everybody who has a good production to show, and then the public has something to look at. Confine a show to the people who are what is called members, that is, who subscribe in some way or other, and you cannot produce a show worthy of support. And it behoves everybody who gives money to be shown for, to stipulate that it shall be open to competition by people from all the country; otherwise it is awarded to the best of a bad lot, which is the best then mustered by the few connected with the Society, while persons out of it, and totally unconnected with it, perhaps, could win with the finest productions in the kingdom. This subject will bear a good deal of discussion; but the leading points may be carefully studied by the managers of country shows, and will be undoubtedly the cause of some alteration in those nearer London.

ALPINE OR ROCK PLANTS.*

All writers on particular branches of Gardening are too apt to refer to other branches which they do not profess to know anything about, and yet give their opinions as glibly as if they were the subjects of their book, and they were quite at home in them. It did not appear at all necessary that the author of a neat and useful little work like this, comprising subjects with which he seems well acquainted, should ramble about among those which he is certainly not acquainted with; and it detracts from his merit when he is in error upon plain matters of fact. Can anybody imagine anything more erroneous than the following?—we think not.

"The period, indeed, has not long elapsed, since the culture of flowers was taken much into consideration at all. There was no periodical, and scarcely a standard work on the subject; and any flowers, cultivated about the premises, were generally in the borders of the *kitchen-garden*."—P. 19.

Can there be a greater libel than this on our floral forefathers for the last century, not to go back further? Can anything show more plainly that the author's knowledge is superficial, and his reading very limited, when he assumes that there was scarcely a standard work on the subject of flowers? Where, too, did he find the extraordinary information that any flowers cultivated about the premises were generally in the borders of the kitchen garden? He was not obliged to be acquainted with all the standard works, most certainly; but he was never more mistaken in his life than he was in writing about what there was and was not, unless it were when he asserted that "any flowers cultivated about the premises were generally in the borders of the kitchen garden." Our forefathers had their fruit, flower, kitchen, and nursery gardens, in all good establishments; and a public writer has no business to look at low life, and take the habits and manners as those of the people. We could point out to the author standard works, in which the very subjects he writes of are well treated; and it is quite a mistake to suppose there was so great a dearth of Garden literature, or that the modern works add so much to our stores of knowledge. Abercrombie's "Every Man his own Gardener" has supplied all the matter for one-half the Garden works of the day. And Miller's Gardener's Dictionary alone has more in it than all the modern works put together. But we are wandering, for we are quarrelling with the Introduction, which is the worst portion of the work, instead of looking to the main subjects. One more passage from the Introduction, however, and we have done:—

"Plants and flowers are greatly attended to at the present day both by amateurs and gardeners; but evidently those more showy, or otherwise most conspicuous, receive most attention, while other plants equally interesting, and in themselves quite as beautiful, are comparatively neglected. The allusion is here made to Alpines or Rock-plants; for, excepting in extensive establishments, botanical institutions, &c., these are very rarely to be met with. This disregard very probably arises from their being so minute, consequently less conspicuous and attractive at first glance, than some of those going under the name of Florists' Flowers."—P. 20.

Not only are they less conspicuous at first glance than some of those going under the name of Florists' Flowers, but they are so after you have looked at them for a month. The truth is, that where anybody wants to write about things *not Florists' Flowers*, they had better let *Florists' Flowers alone.* To get to the pleasant part of our office, let us proceed to the proposed subject of the work. It is a neat and well-arranged lesson to those who wish to adopt a Rockery, Pond, and other necessary arrangements for a collection of Alpine, bog, and select aquatic plants; and as we are the last to undervalue real service, we give the author credit for bringing into a small compass a good deal of useful information, founded on experience. He has read all he could find appertaining to the culture of a particular tribe of plants, and after trying all the rational expedients or modes of growing, he gives us the benefit of the successful, without surfeiting us with the theories and the failures. As he observes in the Preface :—

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* Practical Hints on the Culture and General Management of Alpine or Rock Plants. By James Lothian. Edinburgh: W. H. Lizars. London: S. Highley. Dublin: W. Curry, Jun. and Co.

"In submitting to the public the following remarks on the Treatment of Alpine and other Plants, the author makes no pretensions to originality. He has carefully perused the many useful works containing instructions on the subject, and he trusts he has been candid enough to acknowledge the assistance he has received from them. Having, however, had considerable experience in their cultivation, under the direction and auspices of a worthy master, one of the most eminent cultivators of the present day, and having all along been much interested in their study and culture, the following observations are chiefly the result of experience ; and he trusts they will not be altogether unacceptable or useless, to such as admire this beautiful family of plants.

"Regarding the Treatment recommended for Mosses, Succulents, &c., he has proved it superior to any other which has come under his own observation ; and he has had the advantage of assisting in the formation of a Rockery and Pond on the most extensive scale.

"As he has long felt that this beautiful and interesting group are too much the victims of neglect, he has been induced to make the attempt of being useful in assisting the inexperienced botanical cultivator (for whom it is chiefly designed) to a knowledge of their culture ; and to draw the attention of the admirers of Flora in general to this much neglected, but very interesting tribe of plants ; and, by perusing these hints, the practical man may likewise be stimulated to greater exertions in their cultivation.

"There is no class of plants more worthy the attention of ladies, as they are, in themselves, very interesting and beautiful ; and when once a collection is formed, the major part of them are easily managed, as they do not, like many other families of plants, require the application of manures and composts, or any extra labours which ladies could not well overtake. Those who may try the Wardian Case, recommended at the close of the Treatise, will find it well suited for the growth of most of these plants, and a source of much pleasure and amusement, either in town or country." —Pp. ix. x.

He has arranged the work well. We have, first, the situation to be chosen ; directions for the Rockery ; the Pond ; the arrangement of the plants ; the illustrations, which are neat and pretty, whether on a large or small scale. The main collection of Alpines ; spring treatment ; summer, autumn, and winter treatment of the tenderer and rarer kind of Alpines; and then, in an Appendix, we have the Plants for the Rockery, Pond, &c. ; list of Alpine plants, Ferns and their allies, marsh or bog plants, aquatic plants for Pond, American shrubs to complete the picture, and Mosses. For the details, we shall quote from the second part a portion of the author's remarks on the "Main Collection of Alpines."

"As there are many Alpine plants that will not endure the severity of our winters, and some that cannot be exposed at all in this climate, it hence becomes necessary to have a plant or two of each, according to the genus or species, in pots, that they may, with more facility, be covered or protected during severe or frosty weather. This will also afford the means of replacing any plants which may have died during winter on the Rockery; it will serve, besides, for giving a better acquaintance with the names, and a general knowledge of each genus and species, which, when in pots, can be more advantageously studied, and correctly tallied ; and, when in flower, the seeds of some, which are annuals, are more easily collected for general propagation.

"As it not unfrequently happens, that a suitable place for the main assemblage of these cannot be had convenient to the rock-work, I beg to make a few remarks regarding a situation for this purpose.

"A great space is not required, though the collection be very extensive, as they take up little room when in pots. The spot where the green-house plants are *sometimes* placed in summer, may be rendered a suitable situation for Alpines also ; but where this cannot be spared, or where there is no green-house, a separate situation for themselves must be sought.

"Should a site not naturally suitable present itself, it must be rendered so artificially; on the south side of this locality it is requisite to have a belt, or clump of shrubs and trees, planted promiscuously, to prevent the sun in summer from beating too intense upon the plants, and consequently causing excessive evaporation. By being thus partially shaded, they are kept in a moist and cool state. The north side ought also to be sheltered, at some distance from where the plants are placed.

"The space where the plants are intended to be placed, must be covered with a stratum, composed of a mixture of clay, coal ashes, and a little lime (in the same way that cottage floors are sometimes done), and beat down firmly; then a coat of ashes, finely riddled, can be laid on, previous to placing the plants on it. This prevents worms, slugs, and other vermin visiting the spot.

"In order to protect the plants from frost, and very heavy rains, a frame of some description is necessary. I have seen a frame of wood serve admirably for protecting a very extensive collection; and, in this manner, I have treated them successfully.

"Mr. M'Intosh, however, recommends a pit of his construction. It can best be described in his own words. He says:—

"'In our practice, we have had a pit constructed in the flower-garden, which served a double purpose, being the abode of a collection of these plants during winter, and, when they were put out in spring, it was filled with the more showy species of *Mesembryanthemums* planted out in it, which flowered beautifully till autumn, at which time it was again filled with the Alpine-plants, plunged into finely sifted coal ashes.

"'The walls of this pit were constructed of rock-work, which was planted with rock plants, and was soon completely covered. Nothing appeared, during summer, of a pit, when the whole was covered with plants. The wooden wall-plates and rafters were removed as soon as the *Mesembryanthemums* had established themselves; and were only replaced in autumn, when the others were placed into it; the lights, &c., were used during summer for other purposes. In this pit, which was elevated about a foot in front, and two feet behind, we cultivated, for three years, one of the richest private collections of these interesting plants probably brought together in this country.'[*]

"He adds,—'At first sight there will appear something incongruous in placing a pit in any part of a well arranged flower-garden; but as rock-work and similar things are admitted sometimes, though rarely, in imitation of rocky strata, or mountains in miniature, but, for the most part, with a view to form a proper situation for plants, which are natives of rocky soils, to grow in, we can see no difficulty nor objection in constructing and arranging a rock-work, so as to be capable of being rendered a fit receptacle for such plants during the winter. But as many, and by far the greater part of the rarer species of these plants, can only prosper in a low temperature, their removal to a cool shaded spot, during the heats of our summer, becomes necessary, and will of course leave a space unoccupied. Few plants, therefore, can be brought in as substitutes, that will have a better effect than the genus in question. Their rapid growth, and capability of withstanding our hottest suns, without requiring much water, fit them, in a particular degree, for such a purpose.'[†]

"It may be deemed presumptuous in any young man to add more, after such an authority as Mr. M'Intosh, or to question the opinion of such a talented individual. With all due respect, however, for this eminent Horticulturist, I beg to say, that I consider this sort of pit attended with a great deal of labour; and when hands are scarce, and one cannot command other facilities, he may be exceedingly fond of this tribe of plants, and be anxious to cultivate them too, but must keep his taste for them in subjection to his limited resources. I allude to the labour of carrying backwards and forwards an extensive collection of these; as beds of ashes, on which to place the plants or pots in summer, would ill accord with a tasteful erection of this sort, but which, it is true, may be at a considerable distance from the Rockery. Besides, the expense of glass sashes, though in itself a *minor item*, is still not to be altogether overlooked, when better success than with the common method cannot be expected."—Pp. 38—42.

We have given an honest opinion and a fair specimen of the parts we object to, and also of the work itself, which we approve; and we must say, that the work is got up in a style of printing, embellishment, and binding, that will do honour to any drawing-room table, or the boudoir of a lady of taste.

THE EUONYMUS.

The Euonymus, or Spindle-wood, is a genus of shrubs, belonging to the natural order Celastraceæ. They are not at all remarkable for their flowers, which are altogether inconspicuous; but some of the species are highly ornamental as evergreens, and others form a very useful variety among deciduous shrubs, the foliage of all of them being distinct in its appearance. The species are widely distributed, some of them inhabiting the hedges and scattered woods of Europe; others are found on the banks of rivulets and shady places, in various parts of North America; in Caucasus; in Japan; in Nepal; and in China. The flowers of all the species are borne in axillary bunches.

Euonymus europæus, (the European Euonymus, or Spindle-tree,) is a deciduous shrub, or low tree, not often found much above twelve feet in height, but sometimes, in favourable situations, reaching even to thirty feet, and upwards. It has smooth branches, and opposite, lanceolate-ovate leaves, very minutely serrated, or saw-edged; the flowers are small, greenish white, somewhat star-shaped, produced from the axils of the leaves, and usually borne about three together on one peduncle, or stalk. It flowers in May; and these are succeeded by handsome rose-coloured fruit, which ripen in September. It is found plentifully in Britain, and throughout the middle and north of Europe.

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[*] Practical Gardener, p. 873.

[†] "I am not aware of any plants more highly suitable for the purpose than those recommended."

There are four varieties of this species, E. e. foliis variegatis, which has sickly-looking variegated leaves; E. e. latifolius, with broader leaves than the species; E. e. nanus, a dwarf growing variety, altogether smaller; and E. e. fructu-albo, which produces white instead of rose-coloured berries.

Euonymus latifolius, (the broad-leaved Euonymus, or Spindle-tree,) is a deciduous shrub, or low tree, of excellent habit, with smooth branches, large broadly-ovate leaves, and axillary-branched peduncles of small greenish white flowers, which are produced in June and July, and are succeeded by handsome scarlet fruit. It grows ten or twelve feet high, sometimes more; and is one of the very handsomest of the genus, though, from being generally treated only as a small shrub, it is seldom to be found assuming its naturally interesting character. It is a native of Europe, and particularly of the south of Germany, and of France and Switzerland.

Euonymus verrucosus, (the warted-branched Euonymus, or Spindle-tree,) is a deciduous shrub, of rather a limited growth, seldom exceeding ten feet, and assuming a conical outline; with warted branches, and ovate, serrated leaves: the flowers are borne about three on a peduncle, greenish brown. It flowers in May and June. A native of Europe, particularly of Austria, Hungary, and Carniolia.

Euonymus atropurpureus, (the dark purple flowered Euonymus,) is a deciduous shrub of limited growth, introduced from North America, where it was found on the banks of rivulets, from New York to Carolina. The branches are smooth, the leaves lanceolate, and serrated; the flowers small, dark purple, numerously produced on the peduncles from opposite sides of the stem. The flowers appear in June and July, and are succeeded by red fruit.

Euonymus nanus, (the dwarf Euonymus,) is a sub-shrubby, deciduous plant, with lanceolate leaves and flowers, varying from one to three, on a peduncle. It is a native of the northern Caucasus, and is but little known.

Euonymus americanus, (the American Euonymus,) forms a sub-evergreen small shrub, growing from six to eight feet in height. The leaves are elliptic-lanceolate, and serrated; the branches smooth; the flowers small, yellow tinged with red, from one to three on a peduncle, produced in June and July; they are succeeded by scarlet fruit, which hang like those of the strawberry tree, and have a very gay appearance; from this circumstance, it is called, in America, the burning bush. It is found in damp and shady places, in hedges, among rock, and on the borders of streams, in North America, extending from New England to Carolina.

Euonymus angustifolius, (the narrow-leaved Euonymus,) is a small deciduous shrub, growing five or six feet high, with smooth branches, and leaves generally linear-elliptical, or oblong-elliptical; the flowers are small, usually solitary, of a yellowish red, as in E. americanus, to which plant it is nearly allied. It is found in shady woods, in Georgia, North America. It flowers in June.

Euonymus Hamiltonianus, (Hamilton's Euonymus,) is a shrub or low tree, attaining twenty feet in height, and remarkable for the whiteness of its stem, and the large size of its leaves. It is scarcely hardy, being killed to the ground by the winter of 1837-8, but sprang up again hardy, with vigour. It has an erect trunk and spreading branches, forming a dense fastigiate bush with numerous suckers; the branches are smooth; the leaves are lanceolate, and finely serrated; the flowers, yellowish green, in forked bunches, or cymes.

Euonymus obovatus, (the obovate-leaved Euonymus,) is a trailing shrub, extending over a considerable circumference, but not often exceeding a foot in height. The stem is decumbent, and rooting, producing upright angled shoots; the leaves are broadly obovate, obtuse, and finely serrated; the flowers, three in a bunch, are pinkish, and are produced in June and July. It inhabits marshy places in Pennsylvania.

Euonymus grandiflorus, (the large flowered Euonymus,) is a deciduous shrub, growing from eight to ten feet high, with smooth branches, obovate-oblong serrated leaves, and large white flowers, in June, succeeded by pendulous clusters of yellow fruit. It inhabits the forests of Nepal.

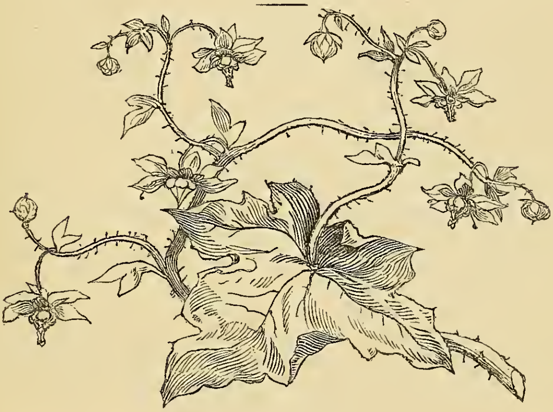
Euonymus japonicus, (the Japan Euonymus,) is a handsome evergreen shrub, nearly hardy, having been but little injured by the winter of 1837-8, when planted against a wall, and standing out in ordinary winters with very little protection. It has obovate, dark green shining leaves, and whitish or pinky flowers, which are produced in July. The plant is not usually, in this country, of very large growth; but in Japan, where it is a native, it grows twenty feet and upwards. There is a variety called E. j. foliis variegatus, which differs in having variegated leaves; and has been found to be more hardy than the species.

These plants are usually increased either by seeds, which are produced abundantly, by cuttings, or layers, which root freely, or by grafting or inarching, in the case of newly-introduced or rare kinds. Seeds and cuttings, however, are the most usual modes of propagation; and in raising plants in this way, nothing is required beyond the ordinary method of carrying this operation into practice.

Some of the species, as E. europæus and E. verrucosus, are best suited for the company of large and common shrubs, where, however, if not planted too closely with the other trees, they will individually attain considerable size, and become rather interesting than otherwise. There is little doubt but that the former of these, especially, is too much overlooked, on account of its commonness, and that it is capable of being much more extensively used than at present is the case. All the commoner deciduous European species grow very freely in the ordinary soil of gardens, without the least difficulty.

The North American species are more difficult to cultivate; they appear to grow naturally in damp shady woods, and on the margins of streams, and hence require more moisture and shade than is usually afforded them in this country. Some are even found in marshes, and would consequently require the characteristic features of the native localities to be imitated in artificial cultivation. These appear, also, to prefer a soil rather sandy or peaty, and hence, perhaps, the kinds of soil and situations usually provided for Rhododendrons, and similar plants, would be found most suitable for these. The kinds which succeed best under this mode of treatment, are E. americanus; E. atropurpureus, E. angustifolius; and E. obovatus.

The Nepal, or Indian species, including E. japonicus and its variety, the most desirable plants of the family, inhabit, for the most part, mountains of considerable elevation, and require, in their artificial management, to be provided with a soil as little subject to superabounding dampness as can be provided. Situations, however, which are usually provided, and devoted to the growth even of common shrubs, are generally sufficiently drained to secure all that these plants require. E. japonicus, and its variegated variety, are suitable plants both to plant out as specimen bushes on a grass plat, in sheltered situations, and to plant against walls or buildings which it may be desirable to cover with a perennial foliage.



LOASA LUCIDA.

Blooms of this half-hardy climber were sent us during last season without a name, and it had grown in the open air, like some other ordinary annuals, having been raised upon heat, like many other subjects for early blooming, and planted out in May. It has since been grown at Henderson's nursery, from seeds imported by Mr. Carter; but it was raised also in several other places, and treated as a green-house plant. It is a delicate white, with an orange-coloured centre, and a yellow outside to the disk. The habit is well represented in the sketch; but, like the rest of the Loasas, it is far more curious than beautiful. It requires only the ordinary soil for all flowers, and may be grown in a pot on a trellis, or in the border, stuck like Sweet Peas.

THE HOLLY.

Hardy and Half-Hardy Species.

The common Holly-tree (Ilex of Botanists) is well known to every one; perhaps more universally so than any other tree or shrub, not even excepting the Oak and the Ivy. The name, Holly, is conjectured to be a corruption of "holy,"—a term which may have been applied to it from the general request in which branches of it were held for commemorative uses at certain seasons of the year, not only in houses, but also in churches, and places of a religious character.

Ilex Aquifolium, (the Common Holly,) is

an evergreen low tree, growing from thirty feet and upwards, and forming a very handsome conical or spiral head. The branches are thickly set with oblong leaves, which are shining, wavy, and beset with spinous teeth. This latter is, however, only the character of the leaves on young trees, and of the lower ones on older trees; the upper ones are, for the most part, entirely spineless: this has given rise to those beautiful lines of Southey's, with which every English reader must be familiar:

> "Below, a circling fence its leaves are seen,
> Wrinkled and keen;
> No grazing cattle, through their prickly round,
> Can reach to wound;
> But as they grow where nothing is to fear,
> Smooth and unarm'd, their pointless leaves appear."

The flowers of the Holly are small and white, collected into little bunches; these are succeeded by the beautiful red berries, which form the symbol of the Christmas festivities —"the holly branch" on the "wall." Of this species there are a great number of varieties, which are thus enumerated by Mr. Loudon:—heterophyllum (various-leaved); angustifolium (narrow-leaved); latifolium (broad-leaved); altaclerense (High Clere, with broad thin flat leaves); marginatum (thick-margined-leaved, without prickles); laurifolium (laurel-leaved, small, without prickles); ciliatum (ciliated leaves, small, with hair-like prickles along the margins); ciliatum minus (smaller ciliated); recurvum (recurved-leaved); serratifolium (saw-leaved); crispum (curled-leaved); ferox (the hedgehog Holly, the surface of the reflexed leaves covered with prickles); crassifolium (thick-leaved); senescens (spineless, or aged); albo-marginatum (white-edged-leaved, of which there are numerous variations); aureo-marginatum (gold-edged-leaved, many variations); albo-pictum (white-spotted-leaved, of which a considerable part of the centre is white, and the margin green); aureo-pictum (gold-spotted-leaved, in the same way as the last, many variations); ferox argenteum (silver-blotched hedgehog); ferox aureum (gold-blotched hedgehog); fructu-luteo (yellow-fruited); fructu-albo (white-fruited). Of these the following selection are markedly distinct in appearance:—angustifolium, marginatum, ciliatum, serratifolium, ferox, crassifolium, fructu-luteo, and instances of the six different kinds of variegation. A pendulous variety, of a strongly marked character, exists in Dalkeith Park; and a fastigiate one in the neighbourhood of Edinburgh.

Ilex opaca, (the opaque-leaved, or American Holly,) forms a beautiful evergreen small tree, of various height, according to the situation in which it is grown. It is applied, in America, to all the purposes for which the common Holly is used in England. The leaves are ovate, flat, and leathery, toothed in a scalloped manner, and smooth, but not glossy. The flowers are white, produced in May and June, and succeeded by handsome scarlet berries. It is found in various parts of North America. There is a variety of this found in Carolina, called I. opaca laxiflora, which has the flowers borne, in a scattered manner, on long peduncles, and produces yellow berries.

Ilex balearica, (the Minorca Holly,) a good deal resembles the common Holly. The leaves, however, are more acute, and flat, less wavy on the margin, and generally of a yellowish green colour; they are sometimes entire, and sometimes spiny. The flowers are white, on very short stalks, produced in May.

Ilex Cassine, (the Cassine-like, or broad-leaved Dahoon Holly,) is a low evergreen tree, a native of shady swamps in Lower Carolina and Florida. The leaves are ovate lance-shaped, flat, sharply saw-edged, and about the size of those of the Arbutus. The flowers are yellowish white, produced in August, and succeeded by red berries, rather smaller than those of the common Holly. It forms a shrub, eight to ten feet high, and, from the profusion in which its berries are borne, has a very handsome appearance in the winter season. It is called I. caroliniana; I. cassinoides; and, by some authors, I. Dahoon.

Ilex angustifolia, (the narrow-leaved Holly,) is an evergreen shrub, found in the swamps of North America, from Virginia to Georgia, growing from six to ten feet high. The leaves are linear-lanceolate, with the margin somewhat bent downwards, and serrated, or saw-edged, near the point. The flowers are white, and are produced in June; they are succeeded by globular red berries. It is a distinct and handsome plant, but not very much grown. Called also, I. myrtifolia, and I. rosmarinifolia.

Ilex vomitoria, (the emetic Holly, or South Sea Tea,) is a small evergreen tree, growing from twelve to fifteen feet high, with oblong or elliptic leaves, blunt at both ends, and crenately serrated on the margin. The flowers are whitish, produced in June, and are followed by red berries, resembling the common species. It is a native of moist shady places, in several parts of North America,—as Florida, Carolina, and Virginia. Ilex religiosa, I. floridana, and I. ligustrina, are names by which this species is also known.

Ilex Dahoon, (the Dahoon Holly,) is a handsome evergreen shrub, or low tree, growing from ten feet upwards. It is found in the open swamps of North America, from Carolina to Florida. The leaves are lanceolately elliptical, nearly entire on the margin, the midrib and petiole slightly villous. The white flowers are borne in May and June, in corymbose panicles, and are succeeded by red berries. In favourable situations it may be regarded as being hardy, but in more exposed and less genial places, it needs some protection. It is the I. Cassine of some authors.

ILEX ODORATA, (the sweet-scented Holly,) is an evergreen small tree, inhabiting Nepal. It has oval-oblong leaves, and the flowers are small, white, and sweet-scented. It is not yet introduced to this country, but is, without doubt, hardy.

ILEX NEPALENSIS, (the Nepal Holly,) is a small evergreen shrub, growing to the height of eight feet. The leaves are elliptic, and entire; the flowers white. It is also called by some I. elliptica. Native of Nepal; not yet introduced.

ILEX DIPYRENA, (the two-seeded Holly,) is an evergreen shrub, or small tree, growing twelve feet in height, and a good deal resembling the common Holly. It has elliptic oblong leaves, and small white flowers, succeeded by dark-brown berries. A native of Nepal, and not yet introduced: probably half-hardy.

ILEX SERRATA, (the saw-leaved Holly,) forms a small tree in Nepal, with acutely ovate leaves, and solitary white flowers. It is probably hardy, and certainly half-hardy.

ILEX EXCELSA, (the lofty Holly,) is a tree of Nepal, of considerable size, and probably hardy.

ILEX PERADO, (the Madeira Holly,) called also I. maderensis, is a native of Madeira, where it forms a low tree, with ovate shining leaves, and small white flowers, followed by large red berries. It is a handsome species, and will endure mild winters without protection.

ILEX LATIFOLIA, (the broad-leaved Holly,) is a splendid half-hardy evergreen shrub, from Japan; it has ovate serrated leaves, shining above, the edges revolute; the flowers are small and white. In the Epsom nursery this plant has been grown with leaves nine inches long.

ILEX CANARIENSIS, (the Canary Island Holly,) is a hardy evergreen tree, growing twenty feet high; the leaves are ovate-lanceolate, acute, flat, shining, and quite entire; the flowers are white, and the berries black.

Besides these, the following may be planted in sheltered situations, against a wall:—I. cuneifolia, I. ligustrifolia, I. chinensis, I. heterophylla, and I. macrophylla.

The common Holly is known as a very useful evergreen shrub, both for planting in shrubberies, and also for the purpose of forming hedges. Although, like most other trees, it prefers a good soil,—that is to say, a rich sandy loam,—yet it is by no means difficult to grow on almost any other; indeed, wherever any preparation has been made for it in the way of trenching and preparing the soil, it will grow freely enough in any situation that is sufficiently drained to carry off the stagnant water, for all the purposes for which it may be required. On clay soils it grows vigorously; and although in these its early progress may not be so rapid, yet whenever it becomes established, it will grow away freely. There are examples to be found, by no means rare, of fine-grown trees, growing in a free loamy soil; in gravelly soil resting on chalk; in loam on chalk; in deep alluvial sand, and in granatic clay. It does not succeed so well in damp and marshy situations, as in those which are drier. It prefers shelter and partial shade; and is one of the few plants which will grow beneath the shade and drip of tall thick trees.

The Holly may be propagated by cuttings and layers, and the more rare and valuable species, and the varieties, are increased both by these means, and by the process of budding, grafting, or inarching; but the common kind is most usually and extensively multiplied by seeds. These take two years to vegetate, and therefore the least troublesome and expensive process is to bury them in heaps after they are gathered, intermixing them with sand to prevent fermentation; these heaps may be occasionally turned in the course of the season, to promote the decomposition of the pulp and husks. In the autumn following that in which they have been gathered, they may be sown, and they will vegetate during the early part of the following summer. They are to be sown in beds of finely prepared soil, after removing them, by sifting, from the sand in which they were buried, and should be covered over to the depth of about a quarter of an inch. In the hot dry weather, which frequently occurs in the spring, the germination of the seeds is assisted by covering the beds with litter,—the fronds of fern or evergreen boughs,—to prevent evaporation from the soil: this covering must be gradually removed as the young plants make their appearance above the surface.

The young seedlings should be transplanted from the seed-bed the second season after sowing, and from that time, until they are finally planted out, they ought to be removed every other year, to render them moderate in their growth, and well-furnished with roots. Those intended for planting in shrubberies must be grown in an open quarter, and more and more space, from time to time, allowed them, in order that they may grow bushy and well-furnished on all sides with branches. The variegated varieties, and other choice kinds, which are multiplied by grafting, require precisely the same treatment; the common variety serving as a stock, when three or four years old from the seed.

As a hedge plant, the Holly ranks next to, or equal with, the Hawthorn, and has at least one advantage over that plant, in being evergreen, and therefore affording as much shelter and protection in the winter season, as shade in the summer. There is, perhaps, no living fence which, on all points, could match with an established and well-filled hedge of the Holly, though this is more rarely to be seen than one of Hawthorn. An excellent, durable, and elegant fence is obtained by an intermixture of the Holly and Hawthorn in nearly equal proportions. Plants intended for this purpose may be kept more closely together in the rows than others, but should be equally frequently transplanted, until fixed in the final station. They are best planted out permanently at as early a period as possible.

Pruning will seldom, if ever, be required by the plants intended for the shrubberies, the removal of an occasional stray branch being quite the extent to which it will, at any time, be required. On the other hand, plants intended for hedges should be kept from growing too rapidly upward, and hence the leading shoot may be very properly removed from time to time. A flattened, or two-sided figure, may also be given to the plants at an early stage, rather than to permit them to form round bushes; but this pruning will be best effected for some time with the knife, shortening back the principal branches only, with the view of moulding the plant to its intended purpose. The shears will not be in requisition until the fence is considerably advanced; and even then, except in the situations where the formal clipped outline may be a recommendation from association, the appearance of the hedge itself will be more pleasing if the principle is adopted of shortening in with a knife the leading and most prominent shoots only.

Some discussion has, at different times, arisen as to the best season for transplanting evergreen trees and shrubs, such as the Holly, and others. Without entering into the arguments on either side, it may be sufficient here to remark, that they may be planted at any time of the year, in calm, mild, and cloudy (or showery) weather; but with the greatest facility and safety, under such conditions, during the autumn and spring months.

The more ornamental and rare species of Holly being principally found in damp and swampy places, will flourish better in situations where moisture is more abounding than in those soils which best suit the common kind. It is, however, by no means recommended that they should be planted on ground which is absolutely swampy; but that which is naturally moist and cool will be found better adapted to them than such as are apt to become very dry and parched during the summer months. In any soil and situation which has been prepared, and rendered fit for the growth of trees and shrubs generally, these species of Holly will flourish sufficiently to display whatever peculiar characters they may happen to possess.

THE CINERARIA.

ITS PROPERTIES AND CULTURE.

There are few flowers which promise to reward the labours of the cultivator more than this singularly beautiful subject. The colours already produced are exceedingly brilliant, intense blue, shaded off to all shades of blue, lilac, and purple; and crimson of all shades, up to pale rose, party coloured of all shades, and pure white centres, while the disks show, in some dark, in others light, such shades, indeed, and colour as promise, when we can widen the petals, and get rid of the notch, which so much prevails at present, to be all that we could wish. The leading faults are, indeed, the narrow-pointed and notched petals; for there are many of splendid habits, and their long season of bloom makes them of the greatest use, not only in the garden, but the conservatory and green-house. Showy and varied, one mass of bloom all over, and early in its development, as well as lasting in its character, few but those who have cultivated them can form an idea what an acquisition they are to a collection of potted or bedded-out plants. It is worth while inquiring, before we go into the culture of this interesting subject, how far the properties, as laid down by high authority, are likely to promote the interest of the plant, and whether any other attributes might not have been better than those for which florists now contend, not without some opposition. The bloom of the Cineraria is naturally a kind of star, formed of narrow petals, lengthening to a point, as it were, but ending in two short points, because a notch seems to be taken from the end, or rather, it seems as if the point were first cut off, and the place notched. The appearance, even in its rude state, was gay; but the petals, from their extreme narrowness, seemed wide apart, and the larger the flower the wider the points were divided. The first thing to consider, then, is which is the beautiful part of the flower, because all properties should be formed on an increase of those parts which give beauty; secondly, in what form the most beautiful portion would best be increased for general effect; thirdly, which is the most offensive or uninteresting portion of the flower, that, by lessening or altering that, it may be improved; fourthly, in what way can such offensive or uninteresting part be lessened, or altered, to be the most striking and fair. First, then, it must be conceded that the beauty of the flower consists in its coloured petals, upon which alone the value and interest of any variety must be founded; these, then, being narrow, and wide apart at the ends, suggest without difficulty, for our second consideration, that, by increasing the width, we should lessen the evil, and by widening the petals more at the ends than at the centre, whence they spring, the coloured portion of the flower would be doubled in quantity, without increasing the size of the bloom, and thus present us with a close mass of that portion which is beautiful; and again, by filling up the notch which disfigured them all, we bring the outline of the flower to a graceful scollop, or nearly a circle, the most beautiful of all forms for a flower which faces us, that is, which shows its whole surface; thirdly, in inquiring into the most ugly, or uninteresting portion of the flower, we have no difficulty in discovering that the disk, as it is called, or yellow centre, is, from its daisy-like appearance, the worst; and fourthly, the only way of altering this for the better, is to keep it within certain proportions, if not to lessen it even more. With these considerations, we have no difficulty in determining that the larger, closer, and rounder the flower, and the less the eye, the better; but, on examining the generality of the present varieties, we observe that, so long as the length of the petal is greater than the diameter of the eye, the flower looks well; so that, upon the whole, the properties of the flower, as already laid down in the "Gardener and Practical Florist," appear to have been adopted with a due regard to what would perfect its beauty, as will be seen by the following quotation from the original work, consisting of a few remarks of the author, and his decision as to what would be perfection if attained. He says, after giving the diagrams,—

"It will be recollected that this very beautiful plant has a small starry flower, with narrow petals, projecting outwards, all round a yellow disk, such petals being pointed or notched. Hitherto, if a new colour, or an unusual size, has been attained, it has been considered a justification to name the plant, and send it out as a new one. All this may be very well for a time, but the period has arrived, when some regard should be paid to the form and habit of a new variety, and the properties may be summed up in a few words.

"The petals should be thick, broad, blunt, and smooth at the ends, closely set, and form a circle without much indentation. The centre or yellow disk should be less than one-third of the diameter of the whole flower: in other words, the coloured circle formed by the petals should be wider all round than the disk measures across. The colour should be brilliant, whether shaded or self, or if it be a white, it should be very pure.

"The trusses of flower should be large, close, and even on the surface, the individual flowers standing together with their edges touching each other, however numerous they may be. The plant should be dwarf. The stems strong, and not longer than the width across the foliage; in other words, from the upper surface of the truss of flower to the leaves where the stem starts from, should not be a greater distance than from one side of the foliage to the other. In these remarks we allude to the plant when in perfection, for, as the Cineraria is a constant bloomer, it continues to branch and bloom long after its proper truss has lost its chief beauty, and its form; the blooms are then more distant and straggling, but still beautiful, for every little branching truss of flowers will preserve the character of the principal one, and the plant look well to the last."

With regard to the culture of this plant, it thrives in the composition which suits almost everything rich—light, porous soil. Loam, peat, and well decomposed dung, in equal proportions, will grow it well. The seed may be sown in shallow pans or pots, in May, kept rather moist, and when up they must be placed in a frame, or under cover, so that they may be easily shaded when they require it. As soon as they have four or six leaves, they may be placed in pots singly, of the size called sixties, (three inches across the top,) in the same kind of compost that we have mentioned. They may be placed again on some hard substance in a frame, because syringing and fumigation may be necessary, in consequence of those sad pests, the red spider and green fly. Many, however, who turn out a number of these green-house plants in June, put the seedlings on a shelf in it; nevertheless, if they are placed where there is plenty of air, and a dry bottom, and well attended to, with the watering-pot kept moist but not wet, they will thrive well in the open air. It is not desirable to grow seedlings large until you see what they are, because they require so much more room to winter; but if room be no object, they will be materially strengthened by shifting them to pots a size larger, called forty-eights (four inches and a half over the top.) As soon as the roots begin to mat on the sides of the first pots, the plants will be double the size, and much more handsome for the change. About September, if they have been out of doors, prepare a garden frame or pit for their reception. The ground on which they stand ought to be impervious to wet, which, when they are watered, should run off, and not soak into the ground; for this reason, ashes, gravel, and sand are all bad; they retain the moisture, and throw up a damp exhalation, which causes various evils; damping many off, and rendering all unhealthy. A paved bottom, laid on a slope, (whether it be stones, tiles, slates, or cement,) is the best; place them here with every provision for covering them well against frost and excessive wet, with the glass lights, and for giving them all the air in mild open weather. Upon the least appearance of the enemy, they must be fumigated. In the establishments where there are green-houses, they may be submitted to that, but taking care that they are on shelves near the glass, and where they have plenty of air when the house is open. In the early spring months they will begin to bloom, and you will soon see which are worth propagating, and which are not. If you find any without the notch at the end, this is one point gained. If you see any with petals manifestly wider than the average, even if it has the notch, there is a point gained. If you find any whose petals are wider at the end than in the middle, they indicate improvement in an important point; for, as will be seen by the diagram, the petal in a really well-made sort will be so, and every approach among seedlings is good. Some, indeed, notwithstanding our aversion to narrow petals, may be of the most scarce and brilliant colours with all the bad qualities of the flower about them; but still colour is a point gained, and therefore, when very beautiful, must be selected; not, however, that all of those selected may be worthy of naming and adding to collections. They may be only desirable for some one point or other to be placed among the varieties from which you are going to save seed. These should be put together in some place by themselves as soon as they are selected. The best way is to get a one-light box, which should be placed full south, to get the sun, and the pots plunged. Here they may have all the sun while the glass is off, but none while they are covered. As soon as the weather is good, remove the glasses altogether. But as these flowers are blooming, before this would be safe, you must cover of nights, and great frost and excessive rains; but allow all the air you can in mild days. Here they will perfect seed, which, as it ripens, must be gathered, dried, and stored, for spring sowing again. In the mean time, any that are considered good enough to propagate and name, should be marked and labelled.

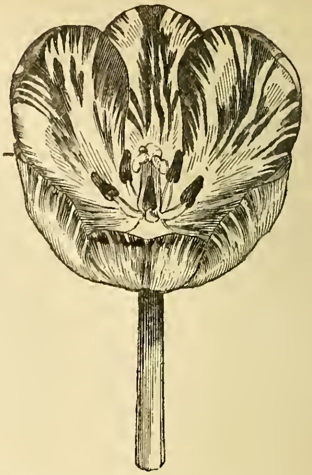
PROPAGATION FROM CUTTINGS.

After the bloom has perfected itself, and decayed, cut down the stems, stir the earth upon the surface, and throw out the loose portion, then earth it up with fresh compost of the same kind, filling the pot rather full than otherwise; refresh them with a little water, and place them in the frame again; or, if you have none convenient, in a dry and sheltered place in the garden. The growth of a few weeks will enable you to detect side shoots, some with roots, and some without roots, and leave only the main plant in the pot, which should be earthed up again, and set by. The shoots which have no roots to them should be stripped of two or three of the bottom leaves, that they may be placed in a pot of the same sort of compost that the plant may have been growing in, with a little sand at top, say a quarter of an inch thick, and covered with a bell glass; or, if there be enough, they may be placed, a dozen or two in a large pan, and a glass, that will fit inside the rim, covered over them. They must never be allowed to dry. The glasses should be occasionally wiped dry inside. Whether there be one cutting or a dozen, they should be so placed that the glass can be pressed into the sand to keep out the air until they have all struck. They can always be watered without disturbing the glass, if it be properly placed inside the rim, because, by watering over the glass, the whole can be soaked; but the drainage must be good, or they will not thrive. If you happen to have a declining hot-bed in which there remains a little bottom heat, the pan or pots may be placed therein. It will rather hasten the striking. Those side shoots which have roots to them, may be immediately potted into sixty-sized pots, and heated the same as seedlings just potted off. In a few weeks the cuttings will have struck, which will be indicated by their beginning to grow; they may be potted off also, as seedlings are potted, in sixty-sized pots. Here the treatment is just the same as that directed for seedlings. If they are required to grow strong, they may be shifted as soon as the roots begin to mat on the side of the pots. The uses of the Cineraria are numerous; they make a beautiful clump plant, if they are kept back from blooming until June, when they can be safely planted out; but this is rather difficult. The only way of doing this properly, is to take away the bloom as soon as you can get hold of it, and keep the plant growing until the end of May; the depriving the plant of its flowers before any of its strength is exhausted, induces a large number of side shoots, which, though they make trusses much less in size, make up for it in numbers. The raisers of seedlings need not be at any loss in these matters, because, by sowing in July, instead of May, and throwing the plant late before potting, then keeping it in a cold frame, the blooms will not be developed before the end of May or the beginning of June; then, as soon as good ones are discovered, they must be taken away to seed from, and all the inferior varieties that will be thrown away, may be put to waste their blooms on the clumps and borders. Cinerarias put all over the conservatory where there is room on the borders, or on the tables and shelves, principally occupied by larger plants, give life to some of the places, which, by reason of large-sized pots, are left bare; and if all the bare parts of the borders, and beds of a conservatory were covered with them, it would look much better than the common earth. A few pots on the shelves of a green house, or on the windows of a dwelling-house, make a pretty diversity among spring flowers; and there is hardly any subject which gives a more gay and finished appearance to a group of flowers than a few well-chosen Cinerarias. Among the seedlings of the present day, many have completely lost the notch in the petal; some have greatly increased in the width of the petal, and others, though none of very splendid colours, have, by the quantity and closeness of their petals, made a very decided advance in the properties. The fact of saving the seed from anything that happens to bear it, instead of being very choice in the saving of it, has prevented the advance from being so great or so rapid as it might be. Among many named flowers sent out by the nurseries, there are very few that have anything but their extraordinary size or colour to recommend them. Those who begin, and want to save their own seed, should commence by selecting about half-a-dozen of different colours, the nearest they can find in shape to the one which precedes this article.

THE GRAFTING OR BUDDING SEVERAL VARIETIES ON ONE STOCK.

There is a charm in a diversity of colours, and the greater the contrast that can be secured the greater the brilliance and effect. We see this in a well-displayed collection; but it is infinitely more conspicuous when we have it on the same tree. Suppose, for instance, a Geranium had half-a-dozen different varieties, as widely contrasted as possible, on one stock; or seven or eight Camellias, of the most striking kinds, were on one stem; or a dozen kinds of Roses on one stock, scarcely anybody would be able to form a notion of its beauty; but some attention is required in all these operations, to secure a proper effect. In the first place, all the subjects grafted, or budded on one stock, should be of the same habit of growth, and bloom at the same season; because, were any one stronger than the rest, it would take the lead in the growth, and not only deprive the remainder of proper nourishment, but it would spoil the uniformity of the head altogether. The effect of this on the Rose may be seen in the growth of a stock when it is not attended to, and the entire stoppage and decay of the head, unless the growing portion of the stock be removed. It is true that the stock itself is of more vigorous growth than almost any Rose that can be put on it; but, nevertheless, a vigorous growing Rose would quite as effectually destroy, or check, sufficiently to spoil, all those weaker than itself. In like manner, the Camellia reticulata, or Louis Philip, or any other of the vigorous growers, would take greatly from Myrtifolia, Sasanqua rosea, or any other weaker kind. The object must be to have equal growers and equal bloomers; for, unless all the varieties bloom at once, the effect is destroyed. We have seen at Sir John Boughton's, some years ago, it is true, a great number of Roses on one stock, and the tree they had formed was immense. We have seen a Camellia with seven kinds upon it, but only four were in bloom at once. The Azalea Indica has, to our knowledge, had Smith's Coccinea, Gladstonitia, Variegata, and one or two more kinds, and bloomed well; and as to Geraniums, we have had four or five very different colours and kinds on the same plant, and it looked very pretty and striking. There is nothing more simple than this operation of budding and grafting; for the same means that will do one sort, has only to be repeated for each. The best mode of doing it with the Camellia, is to select for a stock a plant of something near the form you want it to assume afterwards. Cut back all the branches to two inches, and in these perform the saddle, or wedge graft, that is, the stock, or the scion, is to be cut like a wedge, and the opposite one is to have a cut to receive the wedge; some, however, prefer cutting both upon a slope, the same as if they were splicing a stick. The scion should not have more than one bud, or two at the most, upon it, as all the strength should go into the shoot; and if one bud out of two starts stronger than the other, it should be selected for growth. The stock may be selected of a good sort, that it may itself form one of the varieties, and it should be quite as strong a kind as any; but the flowers ought also to be of a size. Red Stripe, Double White, King, Sweetii, Chandlerii, and such like, are pretty equal in growth, and would do very well; and the stock might be Donkellarii, leaving whatever part of it is to grow close to the bottom. With Azaleas, Indica, Alba, or Danielsiana, will be found the best for stocks, as they are stiff free growers, while almost all the others are pendulous in a great degree. The most effective mode of applying the scions is as a head to a standard, for they will all hang gracefully, and when in bloom be very beautiful.

Among Geraniums, any strong grower will do, and the kinds to be grafted should be selected, so as to grow about the same strength. Nothing takes so freely as the Geranium, nor does it much matter what time of the year it is grafted, so that it be growing. With regard to budding of Roses, it is almost unnecessary to say, that moderately slow growers will make the best and most handsome heads, because they are, for the most part, bushy, and always prolific of their bloom; the contrast of colours hardly goes further than white, yellow, light pink, dark pink, and crimson; these ought to be of a size and of a kind. The Chinas are very beautiful, but will not long stand the hard weather on grafts, although they will sometimes outlive a frost in the ground. The grafting of almost anything is to be effected by mere neatness and attention, and a sharp knife. The Brugmansia suaveolens, or Datura arborea, makes a good stock for Lutea bicolor, and sanguinea. The Acacias graft freely, and as the forms of their blooms are various, they make a very curious subject, but almost anything that has among its family diversity of colour in the bloom, may be made very interesting by this operation. The Rhododendron is easily grafted; and as there are all the shades of the Rose, from a blush white to crimson, and all the shades of purple, from a tinged white, down to the deep atropurpurea; and moreover, as there are pure white, and bright yellow, some of the colours might be selected, and a very interesting object made. As these operations show the skill and taste of the gardener, there can be no impropriety in giving prizes for grafted and budded plants; but we object to their introduction in limited collections, and they would altogether disqualify any collection that contained them, because they cannot be called distinct varieties; and if there be any advantage as to effect, it is unfair towards others. The best plants to graft or bud, the best contrast of colours, the best form of training, are all fair subjects for the exercise of taste and judgment, and the amateur gardener will find abundant field for the exercise of his genius.



DESCRIPTIVE FLOWER LISTS.

THE LEADING VARIETIES OF GOOD AND USEFUL TULIPS.

In submitting an article of this kind to readers, many of whom are already familiar with the great majority of the Tulips at present grown, it may appear somewhat presumptuous; yet, upon consideration, we have conquered our scruples, for we have been in many localities where particular varieties prevail, while others, which would be greatly admired, if known, are altogether absent from these collections. On the other hand, we have found some of the most unpretending florists in different parts of the country growing very fine flowers without holding them in any particular esteem. The small number in our Descriptive Catalogue as compared with the great variety contained in the Trade Catalogues, may be attributed to various causes; but the principal are, first, a wish on our part to omit those which it can do nobody any credit to grow; and, secondly, to our limiting each variety to one name. To show the necessity of this, we may mention the fine old bizard, Captain White, a flower which bears, not only in different places, many different names, but which, in the very same catalogue, bears half-a-dozen names and several different prices. Sanzoe, Captain Black, Admiral Black, Strong's Captain White, and so on, under one name ten shillings, and under another, only five. Then, again, we have the fine old byblomen, Roi de Siam, in one and the same catalogue; Siam, ten shillings, and the same flower, under the name of Acapulco, twenty shillings. Then nobody knows how many names our still first bizard, Polyphemus, goes under, and all different prices. This, therefore, calls upon us to omit all but the cheap name, and reduce the number of our favourite Tulips to a fourth of the apparent varieties still popular. It would not be right to give this Catalogue as a complete thing. The spirit of Tulip growing is abroad; every year adds to the number of good varieties, and it must; we ought to put this forth as the commencement of a series, to receive additions, in continuation, every year. For this reason, too, we do not use any arrangement, alphabetical, classical, or otherwise, as we may, even before planting time, add considerably to the list. In some cases, it will be thought, perhaps, that we commence with the best; but, although the best have naturally struck us as the most important, we have been more guided, in our notes, by the flowers that have come before us in winning stands; and here may always be seen very common as well as very good varieties. At some future period we may collect and arrange all alphabetically, and in classes; but, in the mean time, we will take them as they come from our note-book.

Polyphemus.—A first-rate bizard, rather pale yellow, and good dark markings, but often too heavy; the form pretty nearly the best we have; the petals lying so close as to form a whole cup. In general, the purest of the bizards, but ugly in its breeder state, and when it has gone nearly back. The bottom, however, never stained, but the colour of the anthers will occasionally run a little down the stamens. This would be a blemish if compared with one which was not so; but coloured stamens is not a disqualification like a stained bottom. In its best character this flower cannot be beaten by any existing bizard—second and third rows.

Captain White, or Sanzoe, &c. — One of the most beautiful bizards we have, in several respects the best. The yellow is exceedingly rich. The marking greatly varied in style, but nearly always splendid; above the average in form, though not equal to Polyphemus in compactness and neatness of construction. It is, however, very rare indeed to find it free from three very slight stains at the base of three of the petals, so slight that hundreds would overlook it; we never yet saw it without the indication, knowing where to look for it, but have stood by while it was pronounced clean. Nevertheless, nobody should be without it, for it is as grand as any in the bed in its best state, and, unless stunted in growth, always fine, and the flowers very large. Second row.

Surpass Catafalque.—A bizard of great pretensions as to form; indeed, it is doubtful if any of our present varieties beat it in that respect. The yellow is not so fine, and the marking not so dark as many others; but, well grown, it is a fine show flower, quite pure, often very neatly and perfectly feathered. It is also very plentiful and cheap. Second and third row, if fine.

Charbonnier Noir.—A very pure bizard, with very bad marking; that is to say, there is great uncertainty. It is very apt to come with portions of the breeder colour, so much so, as to scarcely afford a showable or well-marked bloom in twenty; but, when perfect, a most splendid bizard, fine, but pale yellow, splendid bottom, not a bad form. It is so rare to see this flower in its best character, that it has in such state been honoured with other names, such as Surpass Pompe, &c. Second and third row.

Pompe Funèbre.—A bizard of great price and pretensions, but of quite second-rate, if not worse, form. The yellow of this flower is brilliant, and the marking generally pretty, and always effective. The flower is in repute, but a very unsafe one to show in a stand, if the judges go in earnest at the properties; for it must lose every point in regard to form. A small root is well enough in the first row, but anything of a good strong root will reach the second row well. It is as often placed in the first row to attract notice, as it is for its fitness, many growers making it a rule to place a scarce or dear flower in the row beneath the one it belongs to, that it may, by being higher, look conspicuous.

Brown's Polyphemus.—As compact as the original, but higher on the sides, consequently forms a trifle longer cup. The yellow is deep and rich; the marking darker than any other; in fact, as nearly black as it can be when in good order. It appears rather a constant flower; it rises well up to the fourth row when full grown, and the third when comparatively undersized. This was raised by Mr. Charles Brown of Slough, and is justly esteemed as one among the highest class of flowers we have got at present, and one of, if not quite, the dearest. An offset is worth two pounds; a blooming root, five.

Thomas Brown.—A bizard of the fourth row, fully as noble as the last mentioned, but different. The flame is large; the yellow a good gold colour. The marking very striking; feather and flower too; in all we have seen, the colour outside is better than that of many others. The size above the average, and remarkably showy in a bed; a half-grown root will reach the third row.

Lawrence's Duke of Clarence. — This flower comes in twenty different characters, and has had as many names. It is one of those indistinct and eccentric flowers which, besides changing character, actually change colour;

sometimes a bright yellow and dark markings, but the outside always dull, and a struggle between a dirty white and a straw colour; and the markings not half defined, even when the inside is tolerable. We have seen the inside of the flower a good, though not a brilliant yellow, but the outside never bright. It is, however, a bold middle row variety, which will always be useful, though it seems to be more deserving the name of a tricolor than a bizard.

Leonatus Posthumus.—Mr. Rutley broke, from Mr. Clarke's breeders, a number of flowers very distinct from each other, so far as fanciers were able instantly to judge at sight; but, nevertheless, partaking very much of one character. The breeders were, however, disseminated a good deal, and others broke many of the same flowers. Leonatus Posthumus was one of these, original, but not splendid; curious, but not beautiful; nevertheless, the flower bore a price. It has almost always a flame without feather, a brown and yellow, with nothing strikingly good to recommend it; its chief merit being that of differing in colour and character from all the old bizards. It grows, according to the size of the root, in the first, second, or third row, is quite clean, but of no great merit as to form.

Solon.—A first, or, at the most, second-row bizard, of better form than the preceding. A showy bizard, with good yellow, and very often highly uniform marking. Frequently flame without much feather; sometimes without any. It makes a striking flower in the first row, because the flower is large in proportion to the height. The yellow is palish, but very pretty and bright; and it should be in every bed.

Carlo Dolci.—A tricolored flower, broken by everybody, and with everybody a different name. It rarely expands well, the edge of each petal turning inwards, so as to form by every petal a sort of boat or spoon-bowl. In very hot melting weather it opens a little, but the turn-over edge prevents it from forming a good compact cup. The colours are in general showy, but the outside so much duller than the inside, as to take off a good deal from its merit. Indeed, tricolored flowers, unless very striking as bed-flowers, are not worth much trouble, for they cannot be shown unless a class is made for them. It is a second-row flower.

Duke of Devonshire.—A bizard of the best character, broken by Mr. Dixon, of Acre-lane, Brixton. It is of a brilliant yellow, with very black markings. The colour outside very far above the average of the brightest exteriors. It is a middle-row variety, very striking and beautiful in a bed, and worthy of a place among the finest varieties in cultivation. It is, at present, a dear and scarce flower, and must be in demand for a long time yet at good prices. The only safe way to get it at present, that we know of, is of the raiser; for among the dealers there is a great disposition to say it is this, that, or the other flower; and to justify what they say by giving what they say it is, instead of the true flower. The raiser will not, for his own sake, do wrong by it; and it is quite impossible to mistake it when you see the right one. When full-blown it is well up among the tallest in the middle row.

Rose Emily is a showy, clean, middle-row flower, of tolerably certain character; always pretty, sometimes very fine. It is one of the varieties broken from Clarke's breeders, with a tolerably thick petal, clear white, and frequently well-defined marking. As a bed-flower it is highly useful, and ought never to be absent. It is not plentiful, and therefore is pretty much up in price. Smaller roots do for the third row, but it should never be had in the second, for it will run up.

Rosa Blanca.—A very singular difference may be seen in two strains of this beautiful flower; one is beautifully and regularly feathered, and without any flame; the other is richly feathered and flamed, and is desirable in both states. It has been said these are two different kinds, but the sport we have mentioned is the same flower in two different characters; and anybody who grows the feathered kind will find in time that they will obtain the other, though the feathered and flamed kind never, to our knowledge, came back to the lighter character. The form of the flower is pretty, and it is a showy subject in a bed. There are two objections made to it by some persons, but it will be always grown in spite of them: first, it blooms too early for the rest of the bed; and second, after it has been out some days, its beautiful rose colour goes off to a light purple, and so distinct, as to enable a stranger to pronounce one a byblomen, the other a rose. It is a good third, and occasionally used as a fourth-row flower, but is very apt to split and form two roots instead of blowing; on which account many use two bulbs in the same hole.

Madame Vestris.—This, in its best state, that of a feather only, is one of the most rich and beautiful roses we have; but it more frequently comes full of flame and feather, in which state the colours are not so bright. It is a useful show variety; very pure, very distinct from all others, and an excellent marker for the country shows. When it comes with feather only, it seems as if the same quantity of colour that would be used for all the flame and feather were concentrated in the feather only, it is so dense and rich. In this state it was called Princess Sophia of Gloucester; but a few seasons' growth settled the question, and Madame Vestris is unquestionably the identical flower, although the colour is so much deeper while feathered only. It is a second-row flower, but has been occasionally put into the third, when the roots have been finer than usual. It forms a fine contrast to anything in a stand while young, but flushes off purplish as it gets old.

Triumph Royal.—One of the best of our roses, though cheap, and abused as much as any by new names when in different characters. It varies from the slightest possible feather to the deepest flame and feather. It is always beautiful, and deserves, however plentiful it may be, and however cheap, to take its stand among the very best class of roses. It is very pure, and its shape is of the better kind, far above the average. If we were showing four roses for a prize, Triumph Royal, in its best apparel, would be one.

Camuse.—Here is a flower which is beautiful in a bed, and cannot be done without; but which, on account of its form, cannot be admitted with safety in a stand for show. The petals are always three one way and three the other. The three inner ones turn in, while the outer ones keep expanded more; and the flower, however showy in the bed, and it is really beautiful, is a blemish to a stand. It is a very pure and richly-coloured rose; stands well as a second-row flower, and is always handsomely marked. There is a difference of opinion as to the question of whether Camuse and Brilliant are the same flower; the only perceptible difference being, that Brilliant is full of splashes of red colour, as if it had been sprinkled with a brush. In form, colour, purity, grass, and all other particulars, they are alike; but, they do say, that Camuse never comes speckled, and Brilliant never comes pure. But even if this be conceded, all that can, we think, be said, is, that it was a sport which keeps constant. In either case it is very pretty.

Rose Esther.—A flower broken or bought by Mr. Strong, of Brook Green, and never held in any estimation until it was exhibited in 1833, at Hampton; one of the most perfect things that can be imagined. The ground, or white, is of a singular texture and shade. It is not clear white, but a sort of shade, like enamel, and as clear, and apparently transparent. A flame up each petal, alike in all six petals, a close cup, rather taller than we like for perfection, the bottom as pure as possible, and the whole as perfect a beauty as anything we had seen. This, alas! was but one of those freaks that flowers will take in spite of us, and which we have never seen quite equalled since. The flower is naturally coarse and foul at the bottom. In some seasons there has not been a clear bottom in twenty. We should have thrown it away at once altogether had we grown it, or seen it grown in the general way, and not seen the splendid specimen exhibited at Hampton; and to find another like it, we would grow it for years. We have seen it clean but five times in ten years.

Lady Crewe.—A small rose, often very beautifully marked, and frequently smudged at the bottom, but occasionally as clean and pure as snow. It is a brilliant colour, and, in its feathered state, when there is no flame, quite a little star in the outside row. The petals are too narrow to allow its full expansion; and, indeed, like many country flowers, it seems very unwilling to open fully. Its brilliance, as compared with some roses, is greatly enhanced by the colour on the outside being nearly as good as the inside; but even this is secured by a disadvantage, the comparative thinness of the petals.

Claudiana.—A most beautifully coloured rose, good large flower, blooming egg-shaped, and not fully expanding, the petals never losing their individual boat form. This flower, though quite desirable in every bed, is an awkward one to show; and it is seldom to be found without a blue stain on the shoulder among the other colours, towards the lower part of it; the bottom itself is quite pure, and there is nothing to disqualify it as a show flower, though it loses ground sadly if there is blue colour on the shoulder, and must lose with good ones in the form. No bed could be so brilliant without as with it, for there is no substitute for colours or flowers of the height. It is a third and fourth-row variety, and a dozen would not look too many in any moderate-sized bed.

Catalani.—A second and third-row flamed and feathered rose, of extraordinary rich colour, firm petal, pure white; and, besides these qualities, has the advantage of being a free opener. Indeed, after it has been open some days, and long before it loses its brightness, it becomes rather loose than otherwise. It is a great favourite, and always assists a bed materially. It has been often unjustly confounded with Ceres Blanche, and Ponceau Très-blanc. As we have grown them, it has been impossible to mistake Catalani for anything, for it is like nothing else; and we might say the same of Ceres Blanche; for, while the former is a tall second, or moderate third-row flower, we never saw the latter too tall for the first; nor is the flower so bold and striking. The only two beds in which we have seen the true Catalani grown under its own name, was Mr. Strong's, and Mr. Brown's. We have in many others seen the right flower called Ceres

Blanche, and Ceres Blanche called Catalani. In short, it has been too usual to confound the one with the other; and in one establishment the two stocks were placed in the same bag, some say by accident, but we have been told that it was at the suggestion of somebody who said they were both alike. Sports there may be with Tulip blooms, but we doubt very much whether they could sport so decidedly in habit and flower too, as to form a true Catalani and a true Ceres Blanche.

Lac.—Our dearest rose at present, and deservedly a favourite, for its extremely brilliant colour. It is a first row flower, of the full size for its height, with a much thinner petal than we like, and the consequence of all thin petals is a transparency, which deteriorates the white, and, however pure, takes from its density, unless there is a white ground behind it. On placing Lac on a stand, the place it rests on is seen through enough to cast a dark shade, and this is a sad drawback. There are other flowers as bad in this respect, and therefore the nose of each tube ought to be painted white, and to reflex rather than form a cup, which may do, for even that casts a dark shade, by excluding the light from under the flower. The colour of Lac approaches a scarlet, and when it first opens it is a most beautiful object in a bed. It is a dear flower; for those who can afford it are naturally anxious to grow a number; and no one ought to grow one in a bed without one on the opposite side in the same row.

Rose Catharine, or Athalia.—A rose remarkable for its beautiful and very striking colour, rarely coming perfectly free from a stain in the bottom; and yet so desirable as a bad flower, that nobody of any taste would be without it. We have seen it clear, and in some localities much oftener than others; we hear of clear strains of the flower, and we suspect it was one of these supposed clear strains that obtained for it a new name. The lighter it is marked, the clearer it usually is in the bottom, and the brighter the quantity of marking it has, seems to be developed. It is a second row rose, and a few in a bed adds great brilliancy to it.

Camuse de Craix.—A very delicate and handsome rose, which comes out with a straw-coloured ground, and rich crimson scarlet markings. The straw colour appears to be caused by the extreme thickness of the petal, which is a long time getting to its proper whiteness. It is justly esteemed as a star in the first row, and the markings are generally very uniform, and splendid pencilling; when perfectly bloomed the appearance is very grand indeed, though it is some days coming to its proper colour. It is a dear flower, and will remain so as long as it is scarce and in demand.

Louis XVI.—A very noble byblomen, but a most uncertain one. The white is good, and the marking a deep purple, almost black when in fine condition; the colour is very apt to run down too low, and the bottom to come smudged; but people will grow it, in spite of being three or four seasons bad to one good one; out of a score of Louis XVI. in a bed, there will be times when not one flower would be fine and clear as it ought to be; yet, for the sake of a bloom now and then, everybody grows it. There are what the growers call different strains of it, which means that some flowers and their off-sets are generally better than others, although the same variety. We have bought Louis XVI. dirty and bad, and the very first year it has been splendid with us. The form of this flower is rather objectionable; instead of the six petals appearing as if they belonged to each other, and forming a cup, three of them look independent of the three others. The flower, in all its stages, is striking in a bed, and, when perfectly free from breeder colour, is rich and handsome. It will do for the third or the middle row, according to the size of the root.

Siam.—A third, or fourth row byblomen, of excellent properties, fine white ground, and purple margins, petals thick, form above the average, bottom is yellow for the first period of the bloom, and that condemns it all the early part of the season; though it bleaches very fine, must have years before the bloom is off. It has been grown in high character by some cultivators, and, under a notion that the strain was improved, it was called Acapulca. Siam has been shown in winning stands, and is one of the best that can be shown when in good condition.

Reine de Sheba.—A very neat thick petalled byblomen, with good white pure bottom, generally well flowered and feathered outside, a second row flower, rather of the smaller kind. The purple is rather light, the markings generally perfect, or nearly so. The form, though not first rate, is above the average of the old flowers. It is shown successfully, and is an acquisition to a stand.

Violet Alexander, or Violet Quarto.—A middle, or third row byblomen, exceedingly pure at the bottom, when in condition, apt to sport in the colouring, and to have breeder colour; but when fine, a most delicate and beautiful variety. When they go coarse, which they will sometimes, and give more of the breeder colour than is to be tolerated, they are better planted at once in the exposed beds. It cannot get worse for being out of doors, and they will frequently come fine in a year or two. There is a fine strain, that rarely deceives.

Ambassador d'Holland.—A noble black and white middle-row flower, which has pretty universally a stained bottom, a dark creamy stain. It is a useful flower; for we cannot expect to get a complete bed of all clear flowers, and Ambassador is too gay to lose sight of. The flower is a good bold size, and deserves a place even in best beds, notwithstanding the drawback of its creamy bottom. The form is good among the large varieties.

Washington.—A bold deeply-coloured byblomen, with thick petal, good white and clean bottom; three of the petals rise above the others, which rather takes from its value; nevertheless, it is a good showy bed flower, and has been a favourite for many years. The colour is deep purple, and it is generally well marked for exhibition. It will go in the second and third rows.

Lawrence's Friend.—A very pretty byblomen, with a good deal of colour. At first coming into flower, it is like a tricolor; but it always bleaches white, or nearly so, and the flower, though smaller, and taller in the stem, is very much like a handsome Washington. There is the same characteristic in the separation of the top and bottom petals. The flower is in repute, but there are faults; the want of a round outline, and the difficulty of catching a bloom when just in perfection, is great.

Desdemona.—A middle row, light-coloured byblomen, not always clean, or perfectly marked; but a very useful bed variety, very showy and desirable, the cup rather long, but in the middle and third row gives a pleasing change.

Salvator Rosa—A magnificent byblomen, with nearly all the characteristics of Polyphemus Bizard; close, well-formed, compact cup, pure white, deep purple; comes heavy in colour, if grown coarse, in which respect, as well as all others but the colour, it is quite a match for the favourite bizard. The petal is thick, the ground pure, and the colour rich; we have seen it the most magnificent bloom among thousands, and so we may say of the bizard, from which we have no doubt it was raised. It is a second row flower, of good average size, and a star in any bed that had it.

Wallace.—A byblomen, very nearly similar, but of a different purple, so that the two flowers blooming together would be recognised from each other, though possessing much of the good properties in common.

Ceres Belleforme.—A very compact and beautifully marked rose for the first or second row, but most proper for the first. Opens rather yellow, but bleaches white. The cup does not very much expand, but there are many good points to make up for it. The petals are so well together, that, like Polyphemus and Salvator Rosa, they are like one petal instead of six; the colouring is always beautiful in all its characters.

Rubens—A rich byblomen of the second or third row, average size, deep fine purple, pure white, clean bottom, nearly as showy as a Louis, and always good in a bed. The form of the cup is not so good as that of some of the more modern flowers, the petals being rather inclined to narrow at the ends, but it is a noble and desirable flower, with all its faults, and maintains its station in all good beds.

Thalia.—A very grand byblomen, compact, well-formed, but not much expanded cup. The white exceedingly pure and clear to the bottom, bloom above the average size, and a good deal above average quality. The petals remarkably thick, the height equal to the middle row, and in all respects a desirable flower. Apt to mark irregularly, until it is reconciled to the treatment it is undergoing.

Alcon.—A large middle row byblomen clean but loose, showy, but not neatly made. It is a useful flower in a large bed, and, although cheap, still grown by many first-rate collectors. The cup is rather long than otherwise.

Grand Monarque.—A third or fourth row byblomen, very showy, but not always so pure as we like them in the bottom. It is generally feathered strongly, and forms a good feature in a bed. The cup is rather loose, and the white good; but still it is not much valued.

Lord Hawkesbury.—A very fine looking byblomen, fit for the third row, pure white, long cup, fine purple, and the flower altogether showy, and in a bed desirable.

Aglaia.—A third-row rose, very pure ground, and showy, occasionally lightly feathered and heavily flamed. No certainty in the quantity of colour, nor the disposition of it; sometimes very beautiful.

Albano.—One of Mr. Rutley's tricolor flowers, pretty when it comes out with a straw-coloured ground, but undecided when bloomed out; it is a tall second row, or a short third-row variety, and occasionally bleaches pretty nearly a pure white.

Albion.—Under this name, we have a northern flower, which, we are told, is also called Lord Fortescue. Mr. Slater says this was broken at Manchester, from a supposed Dutch breeder. The flower received for it from Manchester, by Mr. Jeffrys, proved to be a Polyphemus. Whether this was a mistake or not, it is impossible to say; the Manchester description of the flower is right also for Polyphemus in all but the shape. They say the cup is long. This cannot apply to Polyphemus. However, the only time we were supposed to see the flower, it was Polyphemus, and nothing else.

Albion (Goldham's).—As we have seen this flower, it was a very showy bizard, with a flame up the middle of the petals, and no feathers. It has appeared to us a distinct flower, but we have no doubt that flamed Polyphemuses have been substituted for them; the one we saw for the true one at Mr. Goldham's, was a flower of less firmness of texture, and rather larger bloom, in proportion to the plant. We have since seen Polyphemus called Albion in several beds, but it was not the flower we saw in Mr. Goldham's collection.

Platoff.—A popular bizard, which has been broken from the breeder by many persons, and each gave it a name. Mr. Strong called it Charles X., Mr. Page christened it George IV., and it has been successively called many other names. Platoff, like nearly all Tulips, is scarcely two seasons alike, but it is in its best character when it comes feathered. It is a middle-row bizard, bold cup, not a bad form, and very showy; but we have seen fifty in a store bed without observing one in good trim. When it is featherd all round with a broad heavy feather, it is a grand addition to a bed, but it is not of first-rate texture.

Bacchus.—A bizard of large size, very showy when it opens, but flushes into a most dirty-looking flower before it has been long expanded. It has been thrown out of most collections, though there is a supposed seedling from the same pod, or, at any rate, a flower from what has been reported to be the same breeders, of a higher quality, called

Paul Potter.—A fine bold bizard, with clear yellow heavy colouring, but pure yellow ground; opens almost as soon as any in the bed, and stands among the last without flushing. This flower was not plentiful, and we have seen the Bacchus sold for it often, and many a man disappointed. It is a fourth-row flower, size above the average.

Bacchus.—In the Catalogues we have this called Rose Bacchus; but, however it may be tolerated in Catalogues, it would be a doubtful flower to show as a rose on the stand. It is a fourth-row flower, comes out a reddish purple, and goes off quite purple, like a byblomen. This is a full size, pure bottom, and useful in a bed, but we hardly know which to class it in; we should place it where we wanted a byblomen.

Rose Walworth.—A fourth-row rose, occasionally very grand, being a high-coloured flower; the ground is a creamy white, and sometimes bleaches quite clear. It has been grown and shown fine, but it is an uncertain flower, and occasionally comes with blue in the bottom.

Marcellus.—This is not so much a show-flower for a stand, as it is a beauty for a bed. Clear and bright in its ground, and often very lightly marked, it is a superb flower in its way, and cannot but be a favourite. When heavily coloured it becomes more like a Charbonnier than anything else; and some have gone so far as to say it is only a fine Charbonnier. People who thus set it down cannot be very close observers. We cannot see the same yellow in the two flowers, nor the same shape. It is not so compact a cup as Charbonnier, though we fear many a fine Charbonnier has been sold for it. This sort of dealing leads to many mistaken descriptions. It is a full second-row flower, and was broken and let out with Polyphemus, by Mr. Lawrence, of Hampton.

Duchess of Kent.—A third-row rose, of very deep colour, with the edges inclined to turn inwards. Like all very heavy-coloured flowers, it will sometimes come foul, but when in proper order it is a fine variety in a bed; the cup is never good enough to show well in a stand. The flower was broken by Mr. Strong, and kept its price up well until the publication of the properties of the Tulip, when all ill-formed Tulips, even to Pompe Funèbre, which has always been costly, lowered in price.

Ponceau Très-blanc, and *Ceres Blanche*, have either been so confounded that no one knows one from the other, or they are the same in origin. No one is more useful as an outside-row flower; and varying, as it does, in quantity of colour, as well as the disposition, you can hardly have too many in a bed. The colour is bright and beautiful at all times; and of a hundred flowers, though perhaps hardly two would be alike, they would be all good.

Apelles.—This bizard has been as costly as most of the good ones, and is far from a plentiful flower, or a cheap one, in the present day. It is, when in its true character, a most beautifully marked bizard, and hardly any better contrast between the ground and the slight feather exists. It is a second-row flower, and might be used as a third occasionally. The only flower we know that comes as slightly feathered, is *Gloria munda yellow*, but the feather of that is often, indeed always, more or less broken; whereas this is sometimes seen with a splendid unbroken feather all round the edge of the petals, and as black as anything that has been seen in the Tulip way. This forms a rich contrast to the clear golden yellows.

Rutley's Queen.—A byblomen of certain good properties, such as thick petal, fine white ground, and dark markings; but it expands freely, occasionally in hot weather comes out nearly flat, and then the petals show vacancies between them, or, in the language of

Tulip fanciers, the flower quarters. It has always brought a good price, for as yet it is a scarce flower; but it is not any more certain as to flame or feather, or more or less colour, than any other flowers.

Lady Louisa.—A flower broken by Mr. Clarke, of Croydon, whose only remark upon it in his book was, "like Pandora, but better." After blooming two years, and observing that it had not the disposition to blight in the petals that Pandora always exhibits, Mr. Glenny, who purchased the stock at Mr. Clarke's death, named it Lady Louisa. Several first-rate growers have bloomed it, and say it is like Pandora; but they also observe that it does not show the fault which alone takes from the value of Pandora, and prevents it from being shown one season in half a dozen. The character of the flower is pure white ground, light purple flame, rarely feather enough to sustain the character; a finely-formed leaf, and rather captivating flower.

Man of Kent (*Jeffrey's King*).—This is, perhaps, one of the most striking bizards we see among the ordinary flowers; bright outside as well as in, but—and we have heard it stated otherwise—there is a smudge at the base of the three inner petals. It *may* come without, for there are other flowers of some standing and value that have occasionally the same fault; for instance, Strong's King, a flower of exquisite beauty, will sometimes show that fault. From this we have a right to suppose that the Man of Kent will occasionally come without that blemish, though we never saw it so. It is a second-row flower, and comes mostly with an unbroken feather, black and coarse, and is very striking in a bed.

Shakspeare.—One of the most widely-contrasted flowers we have, in its different characters. It is capable of coming a brilliant black and golden yellow; and yet, to see it out of character which, in spite of everything it will come, hardly any bizard looks so common, and, we may add, so destitute of good properties. We have seen it with a rich black feather nearly half-an-inch deep, and not a speck on any other part of the petal. It sold freely at ten guineas for some time, and a strain of it, supposed to be more certain, has sold as high as nineteen guineas at a public sale, under the name of Edmund Kean; whether it has proved constant or not, we have not ascertained. Most persons will grow it for the chance of a fine bloom, but it is most inconstant.

Warsaw.—A fine middle-row bizard, tall, strong, and of good form, opening freely and well above most flowers. It is of the character of the Duke of Clarence; the outside not so well coloured as it should be, and the yellow pale. It was broke by Mr. Lawrence of Hampton, and was a favourite with some of the first growers, though, by reason of the paleness of the yellow, never shown in stands.

Sheetanchor.—If we could magnify Polyphemus, it would represent this flower, for many have averred that it is the same. It is, however, taller, stronger, and larger, than ever we saw Polphemus in the same bed, and deservedly a great favourite with growers. It is also said to be more constant than the bizard it is compared with; and, as we never saw one even heavy in colour, it is very likely to be so. Nevertheless it has all the good properties which place Polyphemus, in its best character, at the head of all the bizards.

Neptune.—A striking middle-row flower, remarkably pretty, without any pretensions to place it in a stand. It is exceedingly tall, generally raising itself completely above the rest of the flowers. We have seen it grand; but, from its disposition to show a good deal of the breeder colour, the marking is generally imperfect; but it is this very breeder colour, which is a lilac purple, that makes the variety both remarkable and beautiful as a bed flower. It is of that doubtful character which defies classification, and in its different states may be classed for bizard or byblomen.

Bolivar.—A bright bizard, of the second-row, with head small for its height. It has been highly thought of at times, and occasionally comes very beautiful, but at others it will be smudged at the bottom. It was broken by Mr. Lawrence, of Hampton, and is in most collections.

Bolivar (Strong).—A bizard in no great request, seldom in character, and then not worth growing as a distinct variety.

Byzantium.—A small byblomen, broken by Mr. Lawrence, with an extremely delicate feathering and no marking below it. After some years' trial, we have never seen it change its character. It is a small variety, and with a very pure white. Our first impression was that the petals were too flimsy; we have, however, seen it in stronger growth, when it seemed to maintain a high position for its form, texture, and colour. The flower is as yet very scarce, as all durable varieties are, while the leading growers have not all got it. It is a first-row flower with us, and we think that is its place everywhere.

Tintorette.—A flower of pretty good form, and pretty marking in general; comes out a light straw or cream-coloured ground, and its principal fault is its occasionally remaining so at the bottom; some seasons, however, it bleaches as white as paper, and it is then most beautiful, because the dark feathering is generally very regular. We dislike all flowers that do not come out with a good ground colour, and remain so till the last; a yellow that turns white is never good, and sometimes it is very bad. We have seen seasons when even Siam would not bleach to its colour, but Tintorette is very apt to have yellow remaining at the bottom. It is a good second, or moderate third-row variety, and is, of course, classed as a byblomen.

Dutch Ponceau.—A first-row rose, deservedly in great request, but there are many who hardly know it from Ponceau Très Blanc in fine character. With us the flower is always larger in proportion to its height than the other Ponceau, and always pretty and effective.

Both.—A fourth-row flower of very indistinct character, prized for its tallness as much as anything; but there are times when all its colour seems to be concentrated in a fine black feather. It is creamy white, and will always be remarked for its height. This was one of the flowers broken by Mr. Rutley, who originated a vast number of those varieties which are the least deserving in their general character, and yet the most remarkable and beautiful at times of any that we have in cultivation.

Princess Sophia of Gloucester.—This splendid rose is now ascertained to be nothing more nor less than Madame Vestris; and, although broken by Mr. Rutley, from breeders raised by Mr. Clarke, of Croydon, Mr. Lawrence broke his Madame Vestris from the same breeders, had, like Mr. Rutley's, from Mr. Clarke. The offsets of Madame Vestris frequently come with a feather only, and in that state was the flower named by Mr. Rutley, and a most beautiful variety it is. There may be many bulbs of Madame Vestris grown in a bed without disparaging it; for, while in a young state, they may be in the first row, larger bulbs may be in the second, and the finest may go in the third; and the first-row ones will often maintain the feathered character, which Mr. Rutley first calculated upon, as a new and distinct flower.

Belle Nannette.—A very delicate and distinct rose, with a narrow brilliant feathering, and pretty constant; the white is pure, the cup rather long and inclined to hug, like Claudiana, but very much smaller, adapted only for the first row. It has been said, by some fanciers, that it was "like Heroine, or Triumph Royal;" but, except that it is a rose, we see no one point of resemblance. It is a narrower cup, does not expand so well, is not nearly so large; nor is there any similiarity even in the grass.

Brulante Eclatante (Beteral's).—A gay feathered and flowered rose, very pure bottom, bright colour, pretty constant marker, and never flushes. A good second-row flower, expands well, and, although not a first-rate form in the cup, a very useful show-grower.

Brulante Eclatante.—A larger flower, pretty when it comes out, but soon flushes, and the colour runs into the white, so as to spoil it altogether. This is also a second-row flower, and is very much grown.

Violet Rougeâtre.—A byblomen, of tolerably good form, pure white, rather uncertain, but heavy marking, and in pretty general cultivation. Good-sized flower, for its height, which is third row.

Violet Triumphant.—A showy byblomen, tall enough for the fourth row; colour good, but rarely grown in the best collections, on account of its foul bottom.

Violet Imperial.—Is a second-rate, as well as a second-row flower. The leaf is moderately good, but the bottom is rarely bleached well enough to show the yellow stain, which is greatly against it. The marking is uncertain, and it is very apt to bear blotches of the breeder colour.

Violet Belleforme.—A byblomen adapted for the third row; very uncertain, and the petal too thin and flimsy for anything.

Glencoe.—A very showy bizard, bright and clean for the second row; the bloom full-size, cup very good, yellow excellent; the character is very often a flame down the middle of each petal.

Grotius.—A very pretty byblomen, of rather good proportions, and if of full size, goes up to the third row, but a most difficult variety to keep single, splitting, as it constantly does, into offsets. There is but little dependence on a root blooming, even if it look promising, for that which gives any promise of a blooming bulb, will often split into offsets. Many have discarded it on this account.

Heroine, or Hermione.—A fine rose, of excellent properties, pure white, bright colouring, delicate feathering, and generally much admired. Many fanciers consider it only a sport from Triumph Royal. If so, it is a beautiful one, for it seems even shorter in stature. We have grown it pretty constantly for some years, and if it be another species of Triumph Royal, it is worth growing for its apparent distinctness of character. Triumph Royal is certainly flourishing in many places under different names, and plenty of it in a bed is always acceptable.

Austria.—A tall bizard of unequal character, in general speckled all over, instead of striped or feathered distinctly; but, when in character, it is rich and scarcely approached by any other, being of a splendid gold or yellow bud, the feathering about black. The uncertainty of the flower gives people a distaste for it, and many will not grow it at all, for the remote chance of its blooming in character. We have seen it almost inimitable. The cup is rather long, and it grows right up to the middle row.

Queen Victoria, (Ely's.)—A first, or at most a second-row, byblomen, of very pretty character, when bloomed well, but it has a creamy bottom, which does not always bleach white. It is a favourite with some people, and grown by most.

Maria, (Goldham's.)—This flower is very little known, if it be not the same as Catharine. We have bought it over and over again, and had the mortification to be told it was not true; in fact, we have several times paid our money for Rose Catharine. The flower as cut has no stain; everything is pure, and bright, and clean. It is a second-row rose, and a great favourite, but we fear Catharine is sold for it over and over again, and, if not, we are greatly mistaken; we have seen Catharine in beds called Goldham's Maria, and heard Mr. Goldham disclaim it, and certainly the characteristic of the true flower is that it is bright and clean, and a star in any bed.

Rose Catharine, hardly needs description after what we have said. It has, in general, a stain of blue in the bottom, which spoils it; but it is, with all its faults, a very fine-looking rose. Of course it cannot be shown often, but we have seen it without the stain. It is a second-row flower, and rather flimsy in the petal.

George the Fourth. (Holmes's.)—A superb byblomen, very constant, and esteemed by old fanciers as the best byblomen we have. At any rate, it is a dear and highly estimated flower, in very few hands, and very desirable in a bed.

Lord Collingwood.—A very tall bizard, which has been held in very high estimation. It has a singular colour and character about it, unlike any other bizard; a singular purple cast in the marking, and always brings a high price. It is in most good beds. It is tall even for the fourth row, mostly topping all others; the only fault we are inclined to find with it is that the flower is small for the height of the stem, and it is not a very certain flower as to the marking.

Rose Brilliant is said by many to be only Camuse; it may be so, but has anybody found Brilliant go back to Camuse, or Camuse come to Brilliant? The flower of Brilliant is the same shape: three petals running one way, and three the other. The same length; the same colour; the difference being that Brilliant is always speckled, as if a brush had been dipped in the colour and splashed over it, and Camuse never is. This, we expect, is only a sport; but it seems hitherto to have been a very constant one.

Strong's King is unquestionably, although there have been objections made by the ignorant, who know not even the flower when they see it, "one of the finest bizards in cultivation." In many beds a flower has been grown for it that had no pretensions to the name. It is a fine yellow, with a splendid feather and flame. It is among the best formed flowers we have. The colour of the feathering is a rich reddish brown; and the only point that it loses occasionally, is by a slight smudge in three of the petals, hardly perceivable; but, nevertheless, it is there to be seen whenever the flower comes heavier. The flower is the full size for its height, which is second row, though it is such a general favourite, when in good character, that many place it in the first, because it is conspicuous.

Strong's Duke of York, Strong's Queen, Strong's Prince, and one or two others of the same complexion, are flowers from the same batch of seedlings, but are inferior; and, since Mr. Strong's death, they have gone out almost indiscriminately as Strong's King, and somewhat hurt the credit of the original flower. These are mostly planted in the first row. They are pretty in their way, and that is all that can be said.

Superbe en Noir.—No flower has been so abused as this, by the substitution of others; and it is now very difficult to get hold of the true sort. It is a beautiful second-row flower, with rich purple marking, very pure white, not a bad shape, as clean as snow; and eagerly sought, even by the best collectors.

Rose Monti.—A first-row rose, with a creamy white; very well as a variety in a bed, but not a good one to show. The feather and flame is generally pretty certain, on which account it is a favourite among the country growers in the north.

Pucelle d'Orleans.—A cherry-coloured rose, for the second row; good white ground, pure bottom; not first-rate in form, but very pretty, generally flamed and feathered.

Queen Charlotte, byblomen.—Said to be the best in cultivation; and therefore we are more particular in its description. It is pretty, and assists a bed. Mr. Slater, who is not so particular but that he can pronounce a flower with a foul bottom, a first-rate stage-flower, says of Queen Charlotte, that the petals are rather pointed; and Mr. Butler, who says, it is decidedly the best flowered byblomen we have, admits that the cup "is rather long." It is a second-row flower, and is not very plentiful.

Prince Albert.—A bizard, with a very pale yellow ground, very dark and regular feathering; but whether this is its permanent character or not, we cannot say. It was a grand bed flower when we saw it, and very striking as a novelty. A second row is its place; and if it came always as it did the year it broke, or the year it was first shown in Mr. Groom's bed, it will be a general favourite.

Queen Boadicea.—A break from the same lot of breeders that produced Lady Crewe, but certainly not like that flower. It is a second-row rose, pretty clean, generally feathered, but, like many others, not to be depended on in that particular. The colour is pure and bright, but the petals are not thick, and therefore it does not stand long.

Pretiosa, or *Thunderbolt.*—A large bold rose, of beautiful colour, and striking as a fourth-row flower. The bloom is as round as a ball before it opens, and never forms a good cup like many other flowers ; but each petal forms a bowl.

Princess Victoria (Strong).—This was considered a most extraordinary rose when it was first broken, chiefly, however, from its having been figured in some periodical, from a drawing made for Mr. Strong ; the feathering was represented as very broad and close, the ground colour white and pure, and most persons were anxious to possess it. The difference, however, between a painting and a Tulip was very obvious. It is a high coloured, and not well formed rose, with a yellow or creamy ground, very like a number of Mr. Strong's roses ; but when the bloom is going off, it bleaches pretty nearly white ; it is a second or third-row flower, and of no great attraction in general, but is conspicuous in the bed, and most people grow one or two.

Comet (Strong).—A high-coloured, middle-row rose, with yellow bottom, but it bleaches in a long season, and becomes a creamy white ; it is occasionally a very showy bed flower, but not often ; it is at best a long cup.

Duchess of Clarence.—A fine high coloured-rose, with a straw-coloured ground, which becomes nearly white in a good season. It is rather a striking flower, though not a good cup, and the marking is sometimes very fine and rich. It is apt to come with breeder colour, when it is not fit even for a border flower. It is a second-row flower.

Bijou des Amateurs.—A second or third-row, strong marking flower, creamy bottom, feather and flame very dark, and but for the yellow stain in the bottom, it would be grown by most collectors.

Caledonian Hero.—A large coarse bizard of Mr. Strong's, an ugly shape, and not very constant even to the second-rate marking it can boast when in order. The flower is grown still in some collections, and is so often offered in catalogues, that a description was necessary.

Perle d'Angleterre.—A flower that comes seldom in fine order, but when it does, it is a pretty black feather upon a white. The flower is small, and pretty compact, rarely expanding enough to form a good cup. The finest strain of it, as a flower, so much like it that we could see no difference, is grown under the name of Zoe, and while one brings only a shilling, the other is freely bought at three half-crowns.

Lalla Rookh.—A second row byblomen, beautifully white, and singularly marked ; in great request, and in few persons' beds, although by no means a new flower. Mr. Holmes grows it true, and perhaps, except Dr. Saunders, of Staines, is the only person who has it for stock in any strength ; it is very unlike any other variety we know of.

Jove.—A deep, almost a blood-coloured rose, dazzling in a bed, and at present dear and scarce. The price hardly less than 7*l.* to 10*l.* The flower is in very few hands, and in great request ; a second-row variety, and very striking in its place.

Apollo.—A bright orange, yellow ground, and black marking, distinguish this from most other flowers. It is a second-row variety, and very singular.

Winifred.—A very beautiful byblomen, though not of first-rate shape. The white is pure, the petal thick, the colour of the feather or flame very dense, almost black. It is a very desirable second-row variety, as pretty and as useful as any in the bed. It was raised or broken, or let out by Mr. Pile, and is up to this time in great request where it can be depended on for the true one.

Imperatrix Florum.—A very beautiful, but thin petalled flower, and apt to come foul in the bottom ; nevertheless, there are localities in which it comes strikingly fine. In Mr. Groom's bed at Walworth, it was one of the most beautiful of the byblomens, and very clear. It is used in the second row, but we have had it up in the third row.

Donzelli (Lawrence's).—A large cupped bizard, of bright colours, and singular marking, when in its proper character. It is scarce, and makes a good show in the bed, but is uncertain in the marking.

Camorine.—A pretty byblomen of the third row, almost fourth, one broken from Mr. Clark's breeders, and exhibiting some of the characteristics of his flowers ; thick petal, apt to be creamy at first, strong colour, shortish cup, and desirable ; not by any means plentiful.

Lucette.—A very beautiful rose, broken by Mr. Lawrence ; a handsome clean flower, in great request, and deserving a place in every good bed. This variety has hardly been appreciated ; for, except in a few beds, it is little known.

Rose Astonishing.—A whimsical name, given by Mr. Lawrence to an imported Dutch rose, of which nobody could read the name. All the very knowing ones decided it was Triumph Royal under another name, when it bloomed the first year. The second season, the identical parties decided it was not Triumph Royal, and that they did not know what it was. In the midst of all this hubbub, Mr. Lawrence, in allusion to the sensation created, named it Rose Astonishing. It is something like Triumph Royal, so much so, perhaps, as to render it unnecessary to grow the one where there is plenty of the other.

Coronation (Walker's).—A very beautiful bizard, second row, and clean, both in the ground colour and the marking. We have never seen it higher than the second row, but have been told it will go up to the third row. It was sold after Mr. Walker's death, but is still a scarce and desirable flower.

Fabius.—A bold, uncertain bizard, but when it is in condition, a striking and effective flower. It goes well up to the third row, and looks conspicuously four. It is apt to come with the breeder colour, which is very dirty, and spoils the bloom altogether. In some localities, it is remarkably constant. At Slough, for instance, it was rare to find a bad flower; at Hampton it is generally beautiful; yet at Twickenham and Hammersmith, where many others grew better than ordinary, Fabius was not fit to be seen.

Addison.—A byblomen of very dark colour and good white, deeply feathered as Washington, somewhat taller, not much unlike Lawrence's Friend as to the style of flower, though very perceptibly different. A good second-row flower, and a fine root does for third.

Belle Actrice.—A second-row byblomen of no great repute, and very plentiful, considerations which greatly affect the price of a flower. It is used in most beds as a sort of make up, but there is little excuse for planting it while there are so many finer flowers.

Bienfait.—A first-row flower, of coarse, indistinct marking in general, but occasionally very fine; so much so as to deceive the old growers, and there have been many instances of such flowers being re-named, and sold as new things. Bienfait is used by every grower as a first-row flower. A fine strain of it has been sold under the name of Adelaide.

Queen Adelaide (Groom).—A very beautiful and delicate byblomen, good white, very clean, lilac markings, as distinct and pretty in a bed as any flower that is grown. A second-row variety, in great request, and deservedly so.

Comte de Verginnes.—A third and fourth-row rose, of not a good form, but very pure and distinct, and useful for its height in arranging a bed. High coloured, and not a dear flower. It can hardly be done without in a bed, at least a bed would be arranged under a disadvantage if there were not two or three of these useful roses in it.

High Admiral.—One of the most remarkable flowers in cultivation when in fine condition. It was shown and figured for Mr. Strong, who either broke it or named it. It is called by Mr. Strong a rose; we consider it a bizard; but the flower is very rarely seen in sufficiently good condition to be a favourite. It is a second and third-row flower, and only worth growing in the out-beds, for the chance of there being one day a fine bloom. There is a rich scarlet in the markings at times, which is indispensable to make it tolerable.

Rose Guido.—One of those straw-grounded flowers which take some time to bleach, and are similar to many others of Mr. Strong's flowers. We dislike nearly all flowers that open yellow and bleach white; they are neither one class nor the other. It is a third-row rose, and at times striking and pretty; but we should not want it if we grew the Duchess of Clarence, which is after the same stamp.

Lavinia.—A large-sized rose of Mr. Clarke's raising, as much as seven or eight inches across, when fully expanded; comes out a deep rose, and the colour actually darkens to a purple, and renders the flower a byblomen. It is extremely pure in the white and bottom, generally marks in a uniform style, and is every way desirable. It does not rise more than second row generally, but will occasionally get up to the third.

Trafalgar (Davy's).—A flower of the style of the Duke of Clarence, and has been often confounded with it, whether justly or unjustly; nor is it denied that the Duke of Clarence was broken from the Trafalgar breeders. It is a singular thing that no flower comes more diversified than the Duke of Clarence, and that and the Davy's Trafalgar are so much alike occasionally, as to be pronounced the same, and, so far as the original breeders are concerned, perhaps they are.

David.—A byblomen for the first or second row, as showy as Louis XVI., and far more pure. There is scarcely a more effective byblomen planted. The white is clear, the bottom fine, the colour dense, and the character at all times good. Few people would think a bed at all complete without some of them.

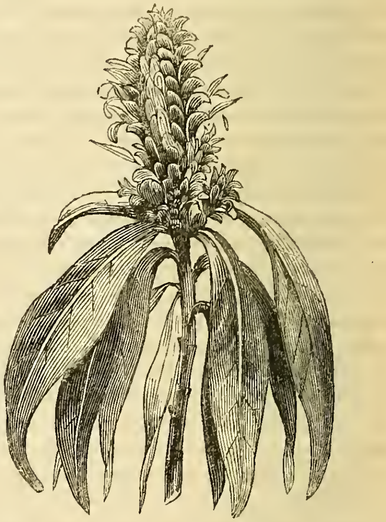
Domingo.—A fourth-row rose, coarse, and of no account, in the ordinary way, for a good bed.

Emperor of Russia.—A second or third row, feathered bizard, uncertain, but very useful when in fine order. It rarely blooms well with strong growth; but with some it is a moderately certain variety; as, however, we procure thicker petals, brighter colours, and clean bottoms, many of the flowers which are the reverse of either will be discarded. In some beds the Emperor of Russia would not bloom well once in three years.

Although the foregoing contains most of those worth cultivating that are to be found in Catalogues, there are many country flowers which will be worth noticing after they are proved; at present, all that is known of them is too vague to be depended on; and there are many others, which are merely other names for flowers we have already described, or subjects so worthless as to be unworthy of notice altogether as show or bed flowers. There is, with some Tulips, so little difference between one and the other, and at all times the flower differs so much from itself one year and another, that it would be impossible to give a descriptive catalogue of one kind of the named sorts to be at all useful. Our list consists of—First, those varieties which are very distinct, and requisite to make a good bed of Tulips; Secondly, those which have been thrust upon the public by reason of some accidental popularity, or by means of advertisements, or trade catalogues. The object of our description is to guide the amateur in the purchase of flowers unlike each other; we are not now entering upon the subject of synonymes of Tulips; that one sort appears under a dozen names is certain; but, for the most part, we have selected the best name of a flower, that is, the name under which it has been seen in its best character, and left the rest unnoticed. It is not by extending the varieties that we make a bed effective, it is by selecting the best, and having plenty of them, that we can give the highest effect by preserving the uniformity and brilliancy. There may be others to add to the present list, even before planting time; because, if we could depend on a list of the northern flowers, we should like to see them properly recorded. If, however, we cannot satisfy ourselves as to the authenticity, we shall leave it as it is.

OLD AND NEW ROSES.

In contemplating some of the best Roses, from the various families, we cannot help admitting, that, compared with the old and still valued varieties, more than two-thirds even of our selections are not so good in character. The love of novelty is all-powerful: a shade of colour, the slightest difference in habit, a different season of bloom, an alteration in the size or colour of the foliage, the distinction between a slow and a fast growth, a longer or a shorter branch, have always been considered by sellers sufficient to warrant a new name and a place in the Catalogues; and the Rose, unlike all other flowers, began with better varieties than hundreds of their successors, or rather their younger rivals, proved to be. This retrograde movement in Roses says but little for the taste of the public, and still less for that of the raisers; but the powerful incentive, money making, accounts better for the raisers, pushing them off than for the public want of taste. Notwithstanding many of the early Roses were really beautiful, and hardly admitted of much improvement, we had, at a very early period of the fancy, such Roses as the Tuscan, the Cabbage, the Cabbage Moss, the Maiden's Blush, White Provence, and Double Yellow. These have, it is true, been succeeded by a few worthy of ranking with them, but they have to be selected from thousands infinitely worse, and hundreds which ought not, for the credit of the raisers' honesty, or the buyers' good sense, to have even passed the seed-bed. If, therefore, we were to select, to lessen our reader's difficulty in choosing, we could not recommend them as Roses equal to our old favourites; for not one of fifty would beat the few we have mentioned, and which ought to be the first they purchase.—*P. D.*



PORPHORYCOMA LANCEOLATA

(*Of Gardens.*)

THE LANCE-LEAVED PORPHORYCOMA.

Among stove plants there is scarcely anything more grand than a good plant of the Aphelandra cristata, with its crested heads of scarlet blossoms. Lately, a new species, still more ornamental, with orange-coloured blossoms, called A. aurantiaca, has been introduced; and in this Porphorycoma we have a smaller growing plant, of somewhat similar habit, but producing rich purple flowers.

These plants belong to the natural family of Acanthaceæ; which receive their name from their affinity of character with the common Acanthus, or Bear's breech, one species of which, the Acanthus mollis, with handsome foliage, is recorded to have suggested the idea of the rich and elaborate Corinthian capital in architecture.

The subject of this notice is a stove shrub, clothed with rather large drooping lance-shaped leaves; and from the top of the stems is produced the remarkably aggregated, and deeply four-angled spike, of closely placed, imbricated bracteas, of a rich purple colour, which curve downwards in a remarkable manner; between these bracts, the corollas, or flowers, are protruded; they are of a rich purplish blue, tubular, and lipped, a good deal like some of the Salvias. It is cultivated in the Royal Botanic Gardens of Kew.

Sir W. Hooker remarks:—"For the possession of this truly charming plant we are indebted to Mr. Forkel, gardener to his Majesty the King of the Belgians, at Brussels, who sent it us under the above name; but, unfortunately, without any history, so as to leave us in the dark as to its native country, and the author of its very appropriate name, given in allusion to the singularly richly-coloured spikes of deep purple, from within the scales of which, scarcely less brightly coloured, (but more inclining to blue,) flowers appear." It was exhibited in the room of the Horticultural Society during the spring, and was much admired. It is a stove plant, and continues flowering throughout the spring and summer months.

These plants should be potted in good turfy loam and peat, in proportionate sized pots, well drained, and require plenty of water when growing. In other points, they should be treated as other stove plants of a similar nature.

NEW ROSES.

We have, by the assistance of Messrs. Paul of Cheshunt, and Mr. Willison of Whitby, been enabled to give a list of Select Roses, which are either new or rare, and are to be let out this autumn. Messrs. Paul are well known authorities; Mr. Willison's we have seen several times during the summer, and do not hesitate to say they are very great acquisitions to the Rose garden.

DESCRIPTION OF NEW OR RARE ROSES, BY A. PAUL AND SON, CHESHUNT, HERTS.

MOSS.

A. feuilles luisante.—Flowers of a delicate pink, with blush edges; a little globular; of medium size, and very double; growth moderate; branching.

Alice Leroi.—Flowers lilac blush shaded with rose, the centre of the flower full rose; finely formed petal, cupped, large and double, buds well mossed; growth vigorous.

Charlotte de Sor.—Flowers bright rose, of a medium size and double, curious foliage.

Comtesse Murinais.—Flowers white, large and double. This is said to be the first White Moss Rose obtained from seed.

Condorcet.—Flowers pale rose, of medium size, and double; growth moderate.

Emperor.—Flowers of a reddish crimson, very compact and double; growth branching and vigorous; the wood very red, and thickly covered with red spines.

Lansezeur.—Flowers of a deep rosy purple, veined, cupped, and double.

Princesse Adelaide.—Flowers of a pale glossy rose, compact, large and full, blooming in large corymbs. The growth of this variety is very vigorous, and it requires but little pruning.

Rosinella.—Flowers of a rosy purple, expanded and double; growth erect and vigorous; the foliage, when young, of a reddish brown.

Varacel.—Flowers dark purple, spotted with rose, small and full; growth branching and vigorous, the leaves of the young shoots of a reddish brown.

DAMASK.

Madame Zoutmann.—Flowers pure white, compact, large and double.

Semiramis.—Flowers pale rose, very large and double, compact; of vigorous growth.

GALLICA.

Oeillet parfait.—Flowers pure white, distinctly striped with rosy crimson; the latter colour shaded with purple like a Carnation, cupped, medium and double; growth erect and small.

HYBRID PROVENCE.

Comtesse Plater.—Flowers creamy white, sometimes tinted with flesh; of medium size; very double.

HYBRID CHINESE.

Comtesse Molé.—Flowers fine clear flesh; cupped, large and double; of robust growth.

Galien.—Flowers rosy lilac, spotted, globular; very large and full growth; vigorous.

AUSTRIAN.

Persian Yellow.—Flowers fine golden yellow, globular, large and full. This is decidedly the deepest and best yellow Rose yet known. It is perfectly hardy, and appears to thrive almost in any situation. Like the other Austrian Roses, if pruned much, it is a shy bloomer; but if left to its own course of growth, it blooms freely enough. The foliage has the fragrance of the Sweet Brier.

PERPETUAL MOSS.

Mauget.—Flowers delicate, rosy crimson, globular and double; of moderate growth.

DAMASK PERPETUAL.

Lady Elphinstone.—Flowers rosy crimson, cupped, large and double; growth moderate.

Laurence de Montmorency.—Flowers rich rosy purple, cupped, large and double; growth moderate. A constant bloomer, and a good Rose.

Mogador.—Flowers rich purplish crimson, cupped, large, and very double; growth moderate.

HYBRID PERPETUAL.

Coquette de Bellevue.—Flowers bright rosy crimson, spotted with white, cupped, and very double; growth erect and dwarf.

Comtesse Duchâtel.—Flowers bright rose, petals very thick, finely cupped, large and double; growth moderate.

La Reine.—Flowers rosy pink, tinged with lilac, globular, very large and double; of moderate growth. A superb Rose.

Mrs. Cripps.—Flowers pale glossy rose, cupped and double; growth moderate.

Yolande d'Aragon.—Flowers blush rose, blooming in clusters, compact, large, and full; growth vigorous.

Duchesse de Montmorency.—Flowers bright rosy lilac and carmine, shaded, compact, large and double; growth erect and dwarf.

La Bedoyère.—Flowers fine bright crimson, compact, large, and very double; growth moderate.

La Bouquetière.—Flowers pale rose, cupped, large and double; growth moderate; erect; fine foliage and habit.

Pauline Levanneur.—Flowers clear rose, pretty colour; compact, large and full; growth moderate.

BOURBON.

Charles Souchet.—Flowers purplish crimson, cupped, and very double; growth moderate.

Comte de Rambuteau.—Flowers bright rosy crimson, finely formed, cupped, large and full; growth moderate.

Du Petit-Thouars.—Flowers bright deep crimson, cupped, large and full; growth robust.

Georges Cuvier.—Flowers clear rose, finely formed, cupped, large and full; growth moderate.

Glory of Paris.—Flowers bright crimson and violet mottled, cupped, very large and full; growth moderate.

Le Grenadier.—Flowers fine bright crimson tinged with velvety purple, cupped, large and double; growth vigorous.

Madame Angelina.—Rich cream or fawn, cupped, large and double, distinct; growth moderate.

Madame Souchet.—Flowers blush tinged, or edged with crimson, compact, large and full; thick petals; growth moderate.

Marianne.—Flowers clear rose, fine colour and petal, compact, large and double; growth robust.

Queen of the Virgins, or *Reine des Vierges.*—Flowers fine flesh colour, compact, large and full.

Souchet.—Flowers deep crimson purple, compact, very large and full; growth moderate.

Souvenir de la Malmaison.—Flowers clear flesh, edges blush, compact, very large and full; growth vigorous.

NOISETTES.

Mrs. Siddons.—Flowers clear yellow, edged with buff, cupped, and double; growth vigorous.

Ophirie.—Flowers nankeen, almost apricot, when first expanding; cupped, and double; distinct; growth vigorous.

TEA.

Princesse Adelaide.—Flowers yellow, cupped, large and double; growth moderate.

NEW ROSES, RAISED BY MR. WILLISON, OF WHITBY.

Aimée Vibert Crispum.—Beautiful pure white, fine shape, altogether unlike any other rose; an acquisition to any collector.

Crimson Crested Moss.—Fine crimson red, expanded flower, the darkest of all the crested roses; distinct and beautiful.

Curled Crested Moss.—Fine red, large and globular; a splendid show rose, and more abundantly crested than any other of the class; decidedly one of the finest Roses grown.

Mottled, or Veined Crested Moss.—Red, with darker coloured veins in the flower; a little uncertain in this respect, but very perfect in shape; also a fine show Rose.

New Crested Moss.—Very double red; a fine show Rose; the crest of this Rose is distinct from the other varieties, being more of a leafy character; it is quite distinct from the others.

General Tom Thumb (*Miniature China*).—Pink; this is one of the smallest morsels of a Rose ever produced,—a plant measuring only two inches every way, embraced in this small compass eight full bloom flowers, buds, leaves, stems, and trunk; no plant can be more desirable for edgings than this Lilliputian when planted in not too damp a situation; few roses thrive so free as this does. (See our Illustration, p. 369.)

Milk Maid (*China*).—Blush; habit of the old China Rose, with flower-buds like wax; the whole plant beautiful and interesting.

Mossy de Meaux Minima.—A beautiful little, compact, pink Rose; the smallest of all the moss Roses; this is a little fairy; this plant requires a dry rich soil.

New White Provence.—This is a fine show rose, and a true Provence; the flowers a silvery white, like those of the Bath Moss, from which it was raised; stems and buds occasionally mossed in streaks.

Panache de Meaux.—A small double silvery white Rose, with red blotches and stripes; not abundantly mossed, but very distinct from any Rose yet out.

Rose Willisonii.—A curious cut semi-double, purple striped Rose; a thornless plant, with willow-like leaves; very extraordinary.

Weeping Rose.—This is a Boursault, with large globular flowers, of a delicate blush, in graceful clusters; the plant is nearly thornless, robust, and even more pendant than the Ash; we may, therefore, expect to see Rose Bowers equal to those of the Ash; no collection ought to be without it as a weeping plant; and as the Rose, in a dwarf state, creeps close to the ground, it might be planted to fall over rocks, or banks, &c., so forming a very interesting and novel object.

Victoria Ayrshire.—Fine rosy lilac, very double, in large graceful clusters; the plant will grow twenty feet in one season; the finest Ayrshire Rose known.

HORTICULTURAL NOTES.

STORING POTATOES.—Whether the rot among the Potatoes is, or is not, so severe as some of the papers would indicate, we will hardly question at present; but we are quite convinced that half the mischief that occurs among the crops, arises from the careless manner in which the tubers are stored. See the manner in which they are pitted, and the quantity of growth which has taken place when they are opened; all this growth has altered the character of the Potatoes. They are, nevertheless, sent off to market with all their stems rubbed off, and were there no detriment to them as food, there must be great damage done to them as seed; yet we find people buying at a time of year when none but exhausted ones can be had. The proper way to store Potatoes, is to lay them on a dry floor, and when they are for seed, they ought to be exposed to the sun and air until they are pretty well green outside, the same as when they are found growing above the surface. But whether for seed or eating, nothing can be better than a dry floor, and they must be moved, from time to time, to prevent them sweating. If any of the Potatoes have been affected by the disease said to be now prevalent, they should be picked out, and when the rotted parts are cut away, the remainder are just as good as sound Potatoes.

THE PROPERTIES OF FLOWERS AND PLANTS.—Before any production can be advanced in quality, it is necessary to point out what properties will be permanently esteemed by the public; for, until that is done, those who raise subjects from seed cannot tell which they are to encourage. They will generally select the largest and most gaudy, instead of the best, and no perceptible improvement will be accomplished.

GUANO AND POTATOE CROPS.—Much has been said about the Potatoe murrain, and we are told it is a new and extraordinary disease, never known until recently. Is there any connexion between the new system of manuring and the new disease? We may be told that the failures take place where no guano has been used; but, it is not so clear that the seed may not have been grown with guano, or come from others which had been so cultivated. We do not believe in the pretended extent of the mischief, and we do believe a good deal of what there is occurs where guano has been used; but, suppose it did, that would say nothing to implicate guano, while there was one field or acre that was affected without the connexion being traced to it. Guano, like all other exciting manures, may change the character of a plant, and render it more susceptible of damage. The Auricula, when excited by poultry dung, is very apt to go off with just such a rot as now affects some of the Potatoes.

WRITERS ON GARDENING.—When gardeners attempt to enlighten each other upon the subject of any particular practice, they should bear in mind the fact, that their fellow-craftsmen have been educated in the same way as themselves, and that they do not require to be taught again. In an expensive Garden periodical, therefore, it seems out of place to read one paper upon the treatment of Brocoli, and another upon growing the Violet; one long yarn, as the sailors say, about growing Heaths, and another about Vines, when all these things have been taught to perfection by authors far better versed in practice, and better able to write. It is not so in a work designed for the multitude of amateurs, and working or under-gardeners; the former, anxious to learn anything as easily as possible, because they know but little, the other equally desirous to profit by reading what head-gardeners too often keep them ignorant of, for interested purposes. In a work like the present, we are anxious to give everything plainly, beginning at the beginning, taking the inexperienced amateur through the most level path, and introducing him to the Science of Gardening at the very threshold. The object is to make him acquainted with the very first steps. The journeyman-gardener will find useful hints, which will forward him in his profession, and the finished gardener may learn something about the culture of Florists' flowers which has not hitherto been attended to, even by the heads of the profession, as we should like to see it. We wish, indeed, that head-gardeners were more encouraged than they are in the culture of the finer productions, instead of being cramped for the means of doing justice even to common ones.

Belgian Petunias.—In the nursery of Messrs. Low, of Clapton, I lately saw a set of twenty-four varieties of Petunia, which had been sent over from some nursery in Belgium, as specimens of the varieties in cultivation there. It is only justice, in reference to these, to say, that they were infinitely inferior to the best of the varieties raised and cultivated in England. The following are the names of the varieties; perhaps the enumeration of them may be of use:—Beauté de Gand, pale pinkish Rose; Charles Lemaire, not in bloom; Comte de Paris, pale lilac; Dauberton, rose purple; Decora, pale lilac, with dark veined eye; Duke of Devonshire, rosy lilac; Dr. Lindley, not in bloom; Duchess of Orleans, large loose purple; General Tom Pouce, pale lilac, diminutive; John Tweedie, large reflexed rosy lilac; Lord Byron, pale rosy lilac; Marie de Bourgogne, lilac, with bluish eye; Prince Ferdinand, lilac, with dark veined eye; Philip Miller, veined lilac; Princess Alice, not in bloom; Reine Louisa, rosy lilac; Rosea delicata, rose; Sierra Leone, lilac, bluish eye; Souvenir de Senegal, not in bloom; Volney, veined lilac. The blooms were chiefly small in size, pointed in the outline, and very flimsy in substance. Beauté de Gand is, perhaps, the greatest novelty as regards colour.—*M.*

Erythrina Crista-galli.—In the gardens of the Hon. J. B. Simpson, at Babworth, in a sheltered situation, and on a sandy soil, there has this season been a specimen of this beautiful plant, growing in the open border, with forty-five flowering stems, from four and a half to five feet high. In situations at all favourable for this class of plants, there is scarcely anything calculated to make a more beautiful object than the Erythrina. On situations and soils which are tolerably drained, this plant will stand out during the winter, without any other protection than a covering of soil, or sawdust, over the crown.—*B.*

The Pansy and its Properties.—It has been contended by some florists, or pretended florists, that the two side petals of this beautiful flower ought to meet at the bottom, to constitute a first-rate form; and yet it is one of the most unmeaning and useless points that could be thought of; because the bottom petal has actually to be lifted up before it can be discovered whether the side petals join or not. We observe, in the original "Properties of Flowers," that they are as little shackled with details as possible. The Pansy is to be round in the outline, and smooth on the edge. Now, if this be secured, it matters not how. Some of the best formed flowers have the side petals far from meeting underneath, and all useless points are carefully left out in the original work on this subject, because, so that the essential properties were produced, it mattered not, in the opinion of the author, how; and, of all the pretended additions or explanations upon the subject of properties, none have been more absurd.

Seedling Epacrises.—In the early part of 1842, I bloomed between two hundred and three hundred seedlings, the produce of grandiflora on impressa, and *vice versâ*; the whole, with very few exceptions, were long flowers, much resembling each other in colour and form, with a habit more like grandiflora than impressa. They were rather too dull in colour. Not despairing, however, of obtaining something good in another generation, I crossed these upon grandiflora, and *vice versâ*, and my expectations in this instance were fully realized, for many beautiful and distinct varieties have been the result; this cross produced flowers, brilliant in colour, and various in character; grandifloras with beautiful white and well reflexed lips; impressas as long as grandiflora, with trumpet-shaped tubes; while others, again, showed an evident disposition to be striped; and one plant has nearly a white tube, with a pale rosy lip. Such is the character of the grandchildren of grandiflora and impressa; and, from their tendency, I have no hesitation in predicting that another cross, aided by miniata, would open such a field for the hybridist as will bring this somewhat neglected, but beautiful, tribe of flowers into general cultivation and public favour. These are the opinions of Mr. Story, a very successful amateur cultivator, hybridizer, and exhibitor, both of Heaths and Epacrises.—*M.*

Garden Labels.—A very elegant and durable label is made by Mr. Bourne, of the Derby Potteries, near Derby, and which are now coming into use. Some which have been used as samples in the gardens of the Royal Botanic Society, in the Regent's Park, are found to answer very well, being unaffected by frost, and very neat and durable. They consist of brown vitrified stone ware, on the face of which is a white tablet, at an angle sufficient to meet the eye readily when they are thrust in the ground. On this white tablet, the black letters are formed, and they are covered with glaze, and the whole "burnt in." This admits of great nicety and elegance in the lettering. They are made either with earthenware stems to thrust in the ground; or, with a socket to fit on to a wooden stem; or simply in the form of a tablet, to suspend from the branches of a tree, or any other convenient situation. They are used extensively in the Arboretum at Derby.

PRACTICAL GARDENING.

OPERATIONS FOR NOVEMBER.—THE FLOWER GARDEN.

Roses, which now form a great feature in all gardens of any pretensions, should be removed, to wherever they are wanted, and plantations of Roses should be made. There are many, however, which do not drop their leaves this month, and some even continue blooming if there be no killing frosts. Nobody cares to disturb a green tree with the certainty of hastening the fall of the leaf, and consequently such as have not dropped their leaves should be left until they have done so. In choosing Roses from a nursery, look well to the point of union between the Rose and the stock. Some heads are very slightly connected, and would be easily blown or broken off. Avoid all such, and look for those which have been budded on strong wood, and have fast hold of it. Select also those with strong, clean wood, well grown. The planting of Roses is a work requiring some care and attention, but no subject will bear removing better when properly planted. The instructions last month must be followed this month, if not already fulfilled. In planting the Roses attend to the general rules for this operation, for they cannot mislead. Procure stocks, and plant them eighteen inches apart, in rows, three or four feet from each other; confine them all to a sort of post and rail, or you may put stakes, about two feet apart, in the rows between some of the stocks, and let a strong cord go from one to the other—whip-cord will do—to tie the stocks to, so as to prevent the wind from disturbing them. Tender Roses, planted out of doors, should be taken up and potted, or laid in by the heels, in some shed, or have the head or plant covered with litter or hay-bands, or some other preservative against frost.

Bulbous Roots of choice kinds, if not planted last month, should be put in the ground this month, early. Potted ones, for forcing, should also be got into their warm quarters, as directed last month, if not already done. The instructions last month are pretty general, and the papers devoted to the arrangement of beds of Tulips and Hyacinths should be read carefully, and attended to practically. This is the last month we should, from choice, plant any kind of bulbs, though we have frequently done it later, when driven to it by circumstances which we could not control. Hyacinths for glasses, combining high quality with cheapness:—*Red and pink*—Grootvorst, Waterloo, Princess Elizabeth, and Lord Wellington. *Blue and purple*—Lord Wellington, Mignonne dryf honte, Nimrod, and Earl Grey. *White*—Anna-Maria, Don Gratuit, Grand Vanqueur, and Premier Noble. These are also excellent in a bed or border. For general instructions as to bulbs, see the last two months.

Shrubs.—Planting, if not done last month, must be done without delay, and all the established shrubs must be examined, and where there is any disposition to grow out of shape, the knife must be used; for vigorous shoots will take away from the whole shrub, and make it stunted and ugly, in the general way; whereas, when any very strong branches are discovered early and checked at once, the whole plant grows more uniform. When this has not been attended to during the growth, it becomes doubly necessary to take off the entire vigorous shoot at this period. All shrubs and trees are the better for having a close bushy surface; and the way to have this is to take off all the ends of shoots when they have grown a little, for it induces side shoots, which fill up the surface, and make a much richer appearance. This applies most to Laurels of all kinds, Hollies, Alaturnus, and such like shrubs; not to Firs, Arbor Vitæas, Cedars, &c., which must grow their own way. Examine all kinds of shrubs that throw up suckers, and take off any that you can remove with a bit of root to them, and that will not be missed, or that will impoverish the appearance of the plant. Let them be planted out to grow into shrubs or trees; Berberis, Pyrus Japonica, Ribes, Calycanthus, and many others, throw up suckers constantly, and by removing them annually a succession of young shrubs may be always raised without any trouble. It is better to shorten all that have run up much, for they make bushy plants. If you wish to make standards of the young suckers, they must not be shortened, but, on the contrary, be allowed to grow up as high as the stem is intended to be, and be then stopped by pinching off the end or heart of the shoot, when lateral branches will come out to form the head; but during the period that the upright growth is going on, all the side shoots, but the two or three close to the top, are to be cut off close to the stem, that they may not take away from the upright growth, which is so desired to form standards.

Laying Turfs.—The last month's operations went to the making of alterations and forming new gardens, which operations conducted us as far as the planting. This month all the space intended to be lawn should be carefully smoothed over; we cannot say levelled, because many lawns are not intended to be level, but to form gentle declivities or sweeps, hill and dale, undulating surface;

therefore, we say, make the surface even, free from holes and inequalities of surface in a small way. It should be all rolled with a heavy roller, and turfs three feet long, one foot wide, and cut all of a thickness, laid all over it. Commence at the edges of the beds and borders, which we presume to have been left pegged out, laying one width of turf very accurately to form the edge to the beds and borders. When this is done, the whole space is to be laid with turfs in straight lines, cutting the ends, to fit close up to the edging turfs, which are laid the way of the edging. These turfs must be pressed close up to each other with the rake, which is the most handy tool there is for the purpose, holding its back to the ground, and pushing its whole length of teeth to the edge of the last turf; continue this to the very last, and fit all close up. The turf should then be beaten with a turf mallet, which is made of a piece of slab or timber, of some two feet long, nearly one foot broad, and thick enough to hold a handle put in sloping, so that a blow can be hit with the whole surface of the mallet. The turf will be the better for watering, if it were at all dry when laid; but it is always best to have the turf cut, if possible, the day it is to be used, or within a short time of its being used. As soon as there has been a good shower of rain to soak the turf well, a roller may be used with advantage. There is hardly any operation in gardening that makes so much show as well executed turfing. It is like laying down the carpet to the drawing-room. It gives a finish which nothing else supplies, and compared with which gravel walks are nothing.

Alterations and New Gardens should be proceeded with in good earnest, and it must be a singular place indeed, if the gardener cannot see some room for improvement. In almost every case some rough ugly shrub or tree can be removed, and a handsome one put in its place, or some vacancies where good shrubs can be planted; and gardeners and owners ought to feel alike interested in making improvements, and now is the time.

Tulips ought to be planted as directed already; few people, from choice, leave them out after the first week; and for many years, round London, Lord-Mayor's day, the ninth of November, used to be considered the last on which it was wise to plant Tulips.

Dahlias should be stored in dry sand, or in a dry cellar, or in some situation impervious to wet, heat, and frost, either of which is mischievous. Their labels should be made fast with copper wires; for string, of any sort, will rot, and iron wire will rust.

Chrysanthemums, in the houses, require water, to give the blooms strength. Those out of doors may be cut down as soon as the blooms have faded; and, if the weather be severe, some litter should be thrown over them, to keep off the frost; or it is better to pot them up, and put them under glass, particularly as some of them are rather tender than otherwise.

Auriculas, Carnations, Piccotees, Heartsease in pots, and Pansies in pots, require a continuance of the treatment already recommended, sparing supply of water, plenty of air, and a mere cover from hard frost and heavy rains.

Fuchsias, Salvias, Verbenas, and other subjects intended to be left out all the winter, should be covered with litter to keep off the frost, or be otherwise, by hand glasses or other covers, protected. Where the stems of anything die quite down, tan or coal ashes will be found a good protection; but where roots are very succulent or juicy, like those of the Dahlia, they are very susceptible of frost, and are better taken up.

Choice Shrubs are greatly protected by litter round their stems; and we have seen Sweet Bay, Arbutus, the Tea Plant, and some other tender subjects, which, in a young state, are easily damaged, protected by throwing Peas haulm all over them: even the Camellia Japonica has survived a considerable frost when so protected. We have also seen mats thrown over those of larger size with great success, but we doubt if it would save those things through some of our severe winters.

Stirring the Borders, taking away all weeds, raking even, and cutting down all stems of decayed flowers, are necessary duties. Fill up the great vacancies with dwarf shrubs from pots, and dress them out for the winter, so as to be as smart as the season permits; and this with dwarf potted shrubs, which may be plunged or turned out of the pots altogether, until spring subjects are ready to take their places.

Anemones.—If any are left in the ground so long as this, they must remain there until the summer, when the leaves shall have just died down, or turned quite yellow; those which are now in the ground have thrown down their roots and shot out their branches, even if they have not actually come up, and any check would do mischief. Those which were taken up at the proper season may be planted.

Ranunculuses of the common sorts, for early blooms, should be now planted; although they would neither come the proper season, nor of sufficient strength to exhibit, they are beautiful objects in the garden, in early spring. The Turban Ranunculus is very brilliant, and very early.

Flower Roots of all kinds, intended to bloom early in spring, should be this month put in their places in the borders and beds, if possible; for, if delayed till the spring, they get a check just as all their strength is wanted for the bloom.

Bulbs, not mentioned, comprising Lilies of all sorts, Fritillarias, Narcissus, Crocuses, and all other kinds that are dug up in summer, must be planted this month, if not done according to instructions last month, or the month previous. The arrangements have been already well defined as respects Tulips and Hyacinths, as well as all others.

Pink Beds may yet be made; but some of the coarse growing varieties may be kept in pots all the winter, and be planted out, by turning the balls out of the pots whole, in the spring; it checks the exuberance of their growth, keeps the bloom within a moderate compass, and will not spoil the lacing, if not delayed too long in the spring.

STOVE AND ORCHIDEOUS HOUSE.

Whether there be one, or separate houses, the attention and management will not materially differ. Many subjects are completely at rest; they have perfected their season's growth, and require no nourishment, compared with that which is wanted during growth. Nevertheless, those which are pushing forth bloom buds, or are growing, must not be neglected. Water must be administered of the same temperature as the atmosphere within, which can only be managed by having tanks or cisterns filled with water, always supplied within the house. Amaryllis, of which every lover of flowers should have a good store, must be watched closely, although considered at rest; for the instant any put forth the least growth, they must be brought to the light, and, if they are at all cramped for room, repotted in pots of a larger size, and regularly moistened; for these plants rise for bloom at all times during the winter; and when once they start they require a good supply of room for the roots and water to moisten them. Orchideous plants, in flower, and some other subjects which bloom during the winter, will be found useful in the conservatory, and should be removed for that purpose; others, that are at rest, may be placed in the coldest part of the house and be kept dry. The plants now in the stove to be forced into early bloom; such as Roses, American plants, Azalea Indica, and Sinensis; some kinds of Camellia Japonica, Siberian and Persian Lilac, small double-flowering Cherries and Almonds, Pyrus spectabilis, common border Pinks, &c., require plenty of moisture as they grow, and as their buds swell; and this month another lot of similar subjects should be brought into the coldest part of the house, to succeed those of last month. Cuttings of stove plants that have struck, may be potted off at any time during the winter, or now, as in that young state they continue to grow the whole time, and will sometimes require two or three shifts before the spring. All growing plants that have not sufficient pot room, should be changed into larger pots. Examine all the plants, to see they are not affected with red spider, mealy-bug, or scale, and if they be, the proper remedies should be applied; cleanliness should be observed in all cases; no dead leaves or decayed blooms should be left upon the shelves, nor be allowed to hang about the plants, or on the pots. The walls and floors should be occasionally syringed with a fine rose, but applied with some force. It not only dislodges filth and dust, but it disturbs insects of all kinds, and the floors should be well washed. The house should generally be closed, and ought not to be lower than 65° by day, and 55° by night.

PITS AND FRAMES.

Generally these are to be managed according to the plants in them. If any are substitutes for the stove or green-house, the directions for these respective buildings must be followed. Half-hardy and green-house plants, Heaths, Camellias, &c., require all the air that can be given, but no exposure to rain; the lights may be taken right off in mild, dry, open weather, and the plants thrive the better for it; but in case of rain, lift up the lights all round, by placing pots under the four corners; for plants should never be wetted in winter time. Those which are to answer the purpose of a stove for tropical plants, or the orchideous family, must be kept up to a temperature of 65° by day, and 55° by night; and if the heat be communicated by dung, see that it does not decline without giving it immediately a fresh supply by means of linings of hot stable dung, and if the heat is in tan or leaves, see that fresh vigour be given in time by an additional supply. In all other points look to former directions.

THE GREEN-HOUSE.

In this department much depends upon the weather; but it is good to avoid as much as possible giving artificial heat. Not one proper green-house plant requires more than to be kept free from the attacks of frost. In mild weather they cannot have too much air, and water must, all through the winter, be sparingly administered. The Camellias which are swelling their blooms must not be allowed to be dry, for they would drop their flower buds; and equal care must be taken to prevent them from being too wet. All dead leaves must be removed, and not be allowed to lie about upon the shelves or floor. Great care must be used to prevent damp; and, for this purpose, the fires must be occasionally lighted on even fine days, that the lights may be opened to allow the moisture to evaporate. Many hybrid Rhododendrons are fit for green-house culture; they are rich in their bloom, and not absolutely tender in their constitution; but they flower so early, that a slight frost would spoil them, and it is even so when they are out of doors. The flowers advance in spite of cold weather, but the frost and cutting winds, though they hardly touch the plant, rot the bloom. Those placed in the green-house bloom in perfection; but they require no more moisture than will just keep them from flagging, until the bloom buds swell and begin to develop the individual pips for flowering, then they want plenty of water. Hoveas, Acacias, and many Botany Bay plants, are apt to advance for flower and to bloom early; Corræas, in variety, are highly ornamental in a green-house, flowering from this month till the end of the spring. There is a pretty variety to be had at this time: Veredis (green), Speciosa (red and green), Pulchella (orange red), Rosea (pink), Alba (white), Grandiflora (crimson), and many of Mr. Milner's flowers, which are better than the originals: a white that beats Alba, a party coloured one better than Speciosa, a green one far superior to Veredis, and there are others; these literally bloom the winter half-year, and all being abundant flowerers, make so great a show in the green-house or conservatory, that they ought not to be dispensed with. Cleanliness is more necessary than ever in winter time; damp shelves and decaying leaves are destructive to plant life and health. The green-fly is not so constant a visitor now as in spring; nevertheless, it is to be found occasionally. The scaly-bug is also very apt to be found in the Oleander, the Magnolia fuscata, and some other strong growing plants. Soap and water, sponging, syringing, and brushing, must be resorted to for the rest; but the green-fly will be got rid of by fumigation. In managing plants that want but little moisture, it must not be supposed that a small quantity at a time is to be given, because the soil must be wetted alike all over. It must be understood that they require water but seldom; when they have small quantities at a time, and the soil is only partially wetted, there is great danger of mischief.

THE CONSERVATORY.

This season it is rather difficult to keep up the interest of the conservatory without a tolerable collection of plants. Some of the Corræas, as we have mentioned in the directions for the green-house, will be found ornamental in the course of the month, if not so already. Here and there among the Camellias there will be found specimens showing their blooms. Many autumnal Roses, and even the two commonly called China, the light pink and the dark crimson, will be still flowering. Dahlias in pots will not be out of flower yet, if properly cultivated. The stove and green-house both yield a few plants that will be ornamental; while the Chrysanthemums, cultivated for late bloom, will add their mite to the floral beauty of the place. Camellias and other plants which are at the worst period of the year fine evergreens, may form the back ground, and give a cheerfulness to the place; and by always cultivating a large variety of potted plants, a show of something like a garden may be kept up. Many herbaceous plants, some heaths, and various other subjects, will be found useful, and the arrangement must be made accordingly. Attend to cleanliness, for it is essential; clearing away dead leaves, keeping the shelves, stands, and floor, free from litter of any kind, and the borders neat, are such matters of course, that they are hardly worth mentioning. Give all the air you can in mild weather, and close against cold winds, wet, and frost. The conservatory only requires artificial heat to prevent damp, and keep off frost.

KITCHEN GARDEN.

Peas.—Sow a few of any hardy early sort on the south-west side of ridges two feet apart; they may be sown rather thin than otherwise, but not too many at a time. The choice of Peas is so great at this period, that it is the better way to trust to the seedsman who should know the locality; and any respectable dealer will serve that which is most likely to succeed: dwarfs are in all cases the best. For those who wish for very early Peas, it is not uncommon to sow in boxes made almost like water-troughs, just wide enough to take a row, and rather narrower at the bottom than at the top; these should be two feet long, and sown with a good early kind; they may be nursed in a frame or green-house till they are considerably advanced, and then turned out into rows. Turfs may also be cut, about four inches wide and three inches thick, in two feet lengths; these to be turned wrong side upwards, and the Peas sown in the soil only just deep enough to be covered; they may be placed any where in the green-house until the weather will admit of their being turned out; they will grow well and yield well; all that is required in these cases is not to plant them out until they are pretty secure from frost, and only to put out, indeed, only to sow, enough for a gathering at each time. Others have boxes of the dimensions we have mentioned, but made with bottoms that come out, and the boxes made wider at the bottom than the top; when the planting time has come, you make trenches large enough to hold the boxes, and having taken off the bottom, place them in the trenches, and by tapping the edges, the sides come off easily, leaving the cake of earth in the trench, which requires only to be filled up properly with soil and the whole watered in.

BEANS.—A crop for one or two gatherings at the most may be planted now, if they are required early, but few families care much about them; a very few, therefore, will suffice. But many prefer sowing a patch in some sheltered place which enables them to protect them from frost better than they can be protected in rows, and then planting them out at a good season; for, although it may seem strange, vegetation checked by removal is not so liable to be killed by frost as that which is growing rapidly, and has not been checked at all; hence Peas and Beans in warm borders frequently suffer by a sharp frost more than any that are standing in colder situations, the former being in full growth, while the latter are stunted. All Peas and Beans should be sown or planted in rows running so that one side is south-west and the other side north-east, earthing up on the north-east side, and forming a little bank the whole length to shield the crop from the north-east winds.

SEA KALE.—Cover up some with inverted flower pots, or proper Sea Kale pots, and surround them with hot stable dung to force this excellent vegetable early into eatable condition, and all that which is not to be forced should be earthed up full six inches, to be cut the instant the buds come through the top. That which is earthed up may also be forced by means of stable dung, for it works through the soil almost as fast as it comes up inside the pot. The proper way of earthing is to make the heap or bank of mould six inches clear of each side the plant, which, allowing six inches for the plant, makes it eighteen inches through at the bottom, and it need only be narrowed to a foot across at top. The alley between the rows should be two feet wide, to give room to walk up and down for the purposes of operating when earthing up, or digging the earth away to cut them when they are ready. The instant the shoots disturb the surface by the effort to protrude is the time for cutting it.

ENDIVE should be protected from severe frosts, and as soon as they are large enough, a quantity should be tied up, like the common lettuce, or as we have observed before, covered with tiles, or inverted flower-pots, with the holes stopped up to prevent light from entering; as Endive, like other subjects, will not blanch in the light, it is only by excluding it that it can be got in perfection. Some may be taken up and planted in boxes of mould to be kept in an outhouse, where it will be good some weeks.

POTATOES ought to be all up; but, if there be any out at this time, the earliest opportunity of housing them ought to be seized; in fact, last month's instructions, if not already followed, should be attended to without the loss of a single day.

CELERY must be attended to in the usual manner, by earthing up carefully on dry days.

SALADS of all kinds, such as Radishes, Lettuces of all sorts, Mustard, Cress, &c., should be sown under glass or in warm borders, where they may be protected by litter. Small Salad, if required, may be sown in pots, and be grown anywhere—in frames, greenhouse, or even the dwelling-house.

CARROTS.—Sow a few in a warm sheltered situation, as there may be some saved for the spring, and they are no great loss if they fail. Dig up and store away any that may be left out in the ground.

PARSNIPS may remain in the ground so that you take up enough for present use, as, in the event of a hard frost, it would be extremely difficult to get them out of the ground without damaging them.

BEETROOT should be stored in dry sand, though, if there be any quantity, it would be troublesome; they will keep well if pitted like potatoes.

SPINACH must be kept clear of weeds, and the outside leaves only must be taken for use.

CAULIFLOWERS under glass, whether plants to be wintered in frames and lights, or large plants for early use under hand-glasses, must have as much air as possible in mild weather, and not be allowed to have rain. In cold winds and hard weather, the hand-glasses must be kept down close on the ground, and frames and lights closed. Those pricked out in warm borders with no glass to cover them, must have good litter over them in doubtful or frosty weather, or hoops and mats, or other covering.

ASPARAGUS.—To force, refer to the operations for last month, and also to manage the beds; indeed, these ought to be done with, except the succession beds for forcing; new beds may be made this month.

CABBAGES.—Plant out in vacant spaces for coleworts or cabbaging, or plant thick enough to allow of drawing out two-thirds to eat as coleworts, and leave the others proper distances for cabbaging in spring. Dig or trench, as the case may be, after properly dressing the ground, and leave it rough dug, or in ridges, that the frost may ameliorate the soil. Drain the ground, if there be any appearance of swampy or wet springs, or if the water lies too near the top.

ONIONS should be cleared of weeds as soon as possible after they are up; the weeds should be removed by hand, because the Onions may be thinned by drawing them very small; for they are good in salads before they are large enough to be seen in a separate state. The smaller an onion is the better and sweeter it is in a salad. Examine stored Onions, and take away from the stock any that are soft, or damaged, or rotten.

FRUIT GARDEN.

Prune wall trees, and nail all the young strong bearing wood in their places; take off any foreright shoots, that is to say, shoots that grow straight out from the wall, unless, indeed, there be any bare place that requires covering, in which case they may be bent over and nailed in. All the branches to be retained should be so placed as not to be in each other's way, and the wall should be well covered with branches at equal distances, or as nearly so as possible. Old wood that has no lateral branches on it should be removed altogether as soon as you can find a reasonable quantity of young branches in a fair way to supply its place; all the bearing wood should be retained. If the trees have been awkwardly nailed, and can be improved by unnailing and shifting their places, do not hesitate to alter it. Begin by keeping the lowest branches as nearly as possible horizontal, or bending downwards rather than upwards; this gives all possible room for the remainder of the branches, which may be placed in turn as close down as will just leave proper room to lay in bearing wood, and so improve the wall in appearance, and the tree in growth and bearing, as to make ample amends for the trouble.

Prune standard trees, one-half of the branches of which are, in nineteen of every twenty cases, superfluous. When in full leaf neither sun nor air can reach the fruit, and if the season be at all good, there is twice the quantity that ought to be allowed to grow. Cut away a sufficient number of branches to give light and air inside the head; remove all branches which cross each other, and head down all that are inclined to run up too tall. The nearer a tree is to the ground the better; nobody grows better pears than the Guernsey and Jersey people, yet you may always reach to gather the top fruit. In market gardens standards are cut up pretty high in the trunk or stem to give room underneath for the other and shorter crops; but even trees so circumstanced should not be allowed to run up so tall as they are. Give a tree less work to do, and it will do the work better; lessen the head of a tree in quantity of branches, and the remainder will bear more in value. The quantity of wood on the heads of trees is quite as fatal to the well-being of the fruit as neglected wall trees would be; but the difference is, that in wall fruit trees the confusion and crowding of branches are under our eye, while standards never occupy our thoughts. Nobody ought to lose this month with an orchard; besides finding wood enough to last all the winter, and sell at a good price in faggots, every tree will produce better fruit, and many that have not done well for years will flourish when the quantity of head is reduced.

Vines.—The pruning should be done this month. Save the strongest wood exactly where you want it; and if there be none exactly where it is required, bring it from the nearest place by bending it to the part you want to cover. The principal art in pruning the Vine, is to leave growing eyes where you want the wood for next year's bearing, and cut the bearing wood of last year back, and so place the wood of the last summer's growth, which is to bear next summer, as to cover the wall best and support the fruit. Cut away all spindling and weak branches, all the useless shoots, and shorten the bearing wood for the next year to the length you require it; always remove old wood when you have strong, well-grown young wood to take its place. Vines may be spurred in some situations; that is, all the young shoots of each side the branches be cut back to two eyes, and so let the spurs be at such distance apart along the branches as will bear what it ought to bear and no more, and let only the same number of shoots perfect themselves for next season; all others should be rubbed off as soon as they appear. Walls or house fronts should be covered equally, but not be crowded; one-half the vines in the country are spoiled, season after season, by reason of the too large a quantity of wood left on them. Almost the first thing to be done with neglected Vines is to cut away the greater part, and begin a fresh growth; at any rate, cut away every thin branch, and if one of the old branches have only thin shoots all over it, cut it right down at once, so that when the growth commences in the spring none but strong shoots be allowed to remain on, the others should be rubbed off as soon as they shoot enough to show their strength or weakness. Let the wood be nailed firmly to the wall by means of strips of woollen cloth round the branches, and the two ends nailed through. If you have an old vine, and do not like to lose all the fruit the first year, to get the wood in good order, save the strongest shoots, and cut them back to two eyes; cut all the weak ones away.

Currant and Gooseberry Bushes may be planted. They require good stiff soil well dressed, but the kitchen garden, if well kept up for other crops, is generally rich enough for anything. They should not be more than three years old from the cutting ; if they are, they should be cut back a little to strengthen the growth of the new wood. The best Gooseberries to plant are Warrington, Wilmot's Early Red, Greengage, Whitesmith, Golden Drop, Yellow Champagne, Royal George, and White Dutch, all high flavoured and handsome. The planting is an operation well detailed in several portions of the calendarial directions : they should be four feet to six feet apart in the rows, and, if there is to be any crops between, there should be at least ten feet distance from row to row.

PRUNING BUSHES, &c.—We do not recommend autumn pruning for these things, but it is not a matter of much importance ; the principal object in pruning is to thin out the branches by the removal of all the weak shoots and leaving the strong ones. Black Currant bushes want but little cutting, nothing but the thin shoots must be removed; but this, when begun from their youngest growth, keeps a bush in excellent bearing condition, and the larger it grows the finer the fruit ; but if they be allowed to run rambling a year or two they are difficult to get back into good order.

RASPBERRY CANES. — These must be thinned so as to leave four or five of the strongest ; the others should be all cut down pretty close to the ground. A stake is used generally to these, and they should be shortened to about four feet. The old shoots which have died down must be removed, the ground should be dug between them and well dressed, but the roots must be preserved from damage by the spade.

HAMILTON'S SYSTEM OF PINE-GROWING.

THE following detail of the treatment of one plant, is given in "*Hamilton's Treatise,*" as an elucidation of the system which he practises :—

"In October 1840 I planted a sucker of the Black Jamaica, with a few inches of the old trunk attached to it, the latter being well rooted at the time, and after its leaves were all dressed off, with a few from the bottom of the sucker, it was immediately planted as follows :—A deep narrow-bottomed pot was selected for the purpose, eleven inches diameter at the top, and at least two inches of drainage was placed at the bottom, on which I placed the bottom of the sucker, or rather the old trunk, and earthed up with the prepared compost. It was then plunged into the tan bed, 90 degrees of heat, and in a few days commenced growing, and showed fruit, which ripened in the following February. The soil used for earthing up was moist; and the plant was never watered any other way, but by sprinkling it over the leaves, and sometimes the soil with a syringe, and this only after a sunny day. This mode of watering is designed to keep the soil continually moist, but not wet, as too much water would injure the roots at this inclement season of the year. The fruit, when cut, weighed 3 lbs. 4 oz. ; although it had to swell in the depth of winter. It must be observed, that by the practice of planting a portion of the old trunk with the sucker, although the former when first planted has frequently no roots, it undoubtedly assists in supporting the sucker, until it has made roots of its own ; and this I ascribe to the sap or juice already deposited in the trunk, which are very probably set in motion by the chemical agency of the soil. The plant, being a succulent one, is capable of holding in reserve its accumulated food in a fluid state for a great length of time, and particularly if screened from the powerful rays of the sun. I have frequently taken off suckers immediately after the fruit appeared, without any of the old stools being attached thereto, and which were merely forming a few roots at their bottom. As soon as potted, and plunged in the tan, the fruit immediately began to grow, and continued growing for seven or eight days, after which period no perceptible improvement could be observed during a further period of eight or ten days. No doubt the already deposited fluids in the plant, assisted by respiration, were the cause of the progression of the fruit for the above period, and the fruit ceasing to grow for a time, was occasioned by the want of roots to supply it with fresh food. But to proceed with its culture. The fruit being cut in February, I commenced the next operation by taking off all the soil down to the roots; and after having dressed off a few of the bottom leaves, I filled up the pot with the prepared compost, a little warm as well as moist, so that the plant required no water, except occasionally sprinkling over the leaves with the syringe, with warm water. The next fruit was cut in November, the same year, and weighed 5 lbs. As soon as this took place, I removed the old soil down to the roots, and carefully dressed off all the leaves, as high as the sucker which produced the last fruit, where I found a quantity of roots already made at its base ; the pot and plant were immediately sunk to the bottom of a much larger and deeper pot, and the process of soiling up, &c., was precisely the same as before, and thus it maintained until the third was cut, which was in the following October, and weighed 6 lbs. 12 oz. I again removed all the soil down to the roots, and dressed off the bottom leaves, to allow the roots free access into the compost; and earthed up with the fresh compost, the latter of which was supported by two courses of broken bricks, built all round, close to the rim inside of the pot, so that the atmosphere might not be excluded from the soil in the pot. If a great layer of soil had been placed all over the surface of the pot at one time, it would have materially injured the roots. The plant was never watered with liquid manure, nor by any other way but that of sprinkling the foliage, and occasionally the surface of the soil, with the syringe, at the time of closing the house, and the fruit has again been cut this autumn, (1843,) and weighed 6 lbs: the weight of all the fruit is avoirdupois, not troy."

Impatiens Coccineum.

THE GENUS IMPATIENS.

ITS VARIETIES, CULTURE, AND MANAGEMENT.

The genus Impatiens derives its name from the peculiar irritability of the seed-vessels, which suddenly and forcibly collapse on being touched when they are nearly mature; in doing so, they burst open and scatter the seeds in all directions to a considerable distance. It is from this peculiarity in the seed-vessel that the common British species has received the specific name Noli-tangere, or Touch-me-not, a name which, though particularly applied to this individual plant, is equally applicable to the others of the genus; all of which, as well as the allied genus containing the garden Balsam, exhibit the same characteristic.

This property of irritability is lodged in the five elastic valves of the fruit, which are very slightly attached at the base, and separate, when ripe, on the slightest touch, and spring back with great elasticity. The cause of the phenomena may be thus accounted for :—The tissue of which the valves of the seed-vessel is composed, consists of cellules, that very gradually diminish in size from the exterior to the interior surface; the fluids contained in the outer cells are the most dense, and, by a process of infiltration through the sides of the cells, they gradually empty the inner cells and distend themselves. In consequence of this, the external tissue is disposed to expand, and the internal tissue to contract, as soon as anything occurs to destroy the force that keeps them straight: this at last does occur by the disarticulation of the valves and adjacent parts; a sudden spontaneous movement follows, and each valve rolls rapidly inwards, and with such force, as to eject the seeds to a considerable distance. That this is somewhat near a correct explanation of the process, appears from a counter experiment tried by Dutrochet, an acute and accurate physiologist, who proved that it was possible to invert this phenomenon by causing the fluid in the cells to filter in an inward instead of an outward direction. In order to effect this, he placed fresh valves of Impatiens into sugar and water (a fluid denser than that contained in the cells), and this gradually emptied the external tissue, and, after rendering the valves straight, ultimately curved them backwards.

There are two species found wild in England, one of which only, however, is generally considered as being truly a native plant; the other (I. fulva) is a North American plant, and although now quite naturalized in many places, as, for instance, on the banks of the Wey, near Guildford, in Surrey, it was probably originally an outcast from some garden. Other species are found in North America, in Siberia, and in Denmark. India swarms with handsome species, nearly all of which are deserving of cultivation. According to Dr. Wight, at least a hundred species occur in those districts from which Roxburgh described only three. Forty-seven species are named by Wallich from Sylhet, Pundooa, Nepal, and the Peninsula; and a great many occur in Ceylon, and the islands of the Indian Archipelago, several of which are described by Dr. Arnott.

For the Indian species—unquestionably the most beautiful and useful, a moist climate and moderate temperature seem to be the conditions most favourable to their growth and production in the highest state of perfection. "At Courtallum," observes Dr. Wight, "whence I have eleven or twelve species, they most abound in shady places, on the tops of the hills, with a mean temperature, during the season of their greatest perfection, not exceeding 70°, if so much. At Shevaggery, about fifty miles north of Courtallum, I found five out of seven species on the highest tops of the mountains; none of the five under 4,000 feet, and three of them above 4,500 feet of elevation; the mean temperature, as deduced from twenty observations, continued through four days, at an elevation of 4,100 feet, being 65° of Fahrenheit's scale. The two found at a lower elevation, were both either growing in the gravelly beds of streams, or immediately on their banks; the temperature of which was ascertained to be 65°, while that of the air at noon was only about 75°, a temperature, I presume, but little above that in which they delight on the Bengal frontiers. There is one other point respecting the effect of climate on plants of this genus to which I wish to call attention, as it may ultimately prove useful to any one who may again attempt to subdivide it, and is, in the mean time, in a physiological point of view, exceedingly curious. It is that most of the species from the colder regions of the Himalayan mountains correspond with the European I. Noli-tangere, in the form and dehiscence of their capsule (seed-vessels); that is, they split from the base, rolling the segments towards the apex, while those of the warmer regions split from the apex and roll their segments towards their base. This difference of habit between those of India Proper and the Himalayan forms, is well worthy of notice, as it shows that the affinity which exists between the flora of the latter and that of Europe, is stronger than between it and the Indian. The innate power which plants enjoy of selecting the soil and climate in different countries, however remote, most suitable to their perfect development, and which the preceding remarks have shown to be so eminently possessed by those of this order, may, when the subject has been more studied, and is better understood, prove of immense benefit to the scientific cultivator." Dr. Royle's observations are to the same effect. He says: "There is a peculiarity in the hill climate of India, where the moderation and equability of temperature, excess of moisture, and consequent smallness of evaporation during the rainy season, has been shown to be favourable to the existence of tropical plants. At this season (the rainy season) the Balsams may be seen apparently unchanged for weeks together, with other plants that delight in a moist temperature, as Orchideæ, Scitamineæ, a few Melastomaceæ, Cyrtandraceæ, Begonias, and others, of which the genera are considered peculiar to a tropical climate, and of so loose, moist, and cellular a texture, as would, at any other season, in this locality, be destroyed in a single day."

It is recorded, as a curious fact, that some of the earlier flowers of many of the species consist of scarcely anything but the pistils. In some nearly related families, the Violets, and Oxalids, the reverse of this takes place, for the late flowers are devoid of petals. In all these cases, however,—in the Impatiens where the pistils are unaccompanied by sepals or petals, and in the Violet where the flowers have no petals, the plants produce perfect seeds from these apparently imperfect organs.

DESCRIPTIVE LIST OF THE SPECIES OF IMPATIENS.

IMPATIENS NOLI-TANGERE (the Yellow Impatiens, or, the common Touch-me-not).—This is a common European species, generally found in shady and humid places. It is an erect growing annual plant, with succulent fleshy stems, growing two or three feet high, with numerous branches: the leaves are narrowish, ovate, somewhat square at the base, and saw edged. The flowers are produced in axillary clusters of three or four together, large, pale yellow, dotted with small red spots, near the centre. It has been remarked of this species,—and the remark doubtless applies more or less to all,—that the leaves, contrary to what is general, are expanded in the day-time, and become pendent or deflected at night: this is, when fully supplied with moisture, for when they lack water, they speedily droop, and are as speedily revived on its application. The plant it is affirmed is dangerously diuretic, and very acrid; and goats only are said to eat it.

IMPATIENS FULVA (the tawny-flowered Impatiens, or Touch-me-not).—This is considered to be a North American species, though it occurs wild in England, and probably was not for some time distinguished from the common species I. Noli-tangere. It grows similar to that species; bears ovate leaves, tapering to the base, with deflected glands, and small yellow flowers, spotted with red over the inside of the petals. It is also called I. biflora. Among the plants which Mr. M'Nab observed in the vicinity of the celebrated Falls of Niagara, this species of Balsam was growing nearest to the fall, and quite within the influence of the spray: in this position, however favourable to exuberant vegetation, he did not observe it producing any flowers. It is an annual.

Impatiens pallida (the pale-flowered Impatiens, or, Touch-me-not).—A North American annual species, nearly related to I. Nolitangere, with pale yellow flowers, very slightly dotted with red. This plant appears to be found in some parts of England; and is, perhaps, hardly distinct from the common species.

Impatiens candida (White-flowered Impatiens, or, Touch-me-not).—A stately annual, growing six feet high, under favourable circumstances, with a bright green, obtusely four-angled succulent stem, branched to the very ground; the leaves are generally in whorls of three, narrow-lanceolate, tapering to a fine point, and edged with minute crimson serratures, or teeth: between the leaves forming the whorls is situated a row of small crimson glands. The flowers are white, speckled slightly with crimson, large and showy; they grow in loose terminal umbels, and are produced in succession throughout the autumn. It was introduced from the Himalayan mountains, and though it will grow freely, and flower when treated in the open ground as a half-hardy annual, yet much of its delicacy is thus lost, and, in order to realize its full beauty, it should be grown in a green-house, in the same way as the common garden Balsam is cultivated. Nevertheless, in sheltered situations, the out-door plants will not be without interest.

Impatiens rosea (Small pink Impatiens, or, Touch-me-not).—This grows four or five feet high, with less of a branching habit than some of the other kinds. It is a beautiful half-hardy annual, from the Himalayas, with succulent upright stems, and linear-lanceolate alternate leaves, from six to eight inches long, tapering most towards the base, and edged with minute saw-teeth. The flowers, which are small, are produced in clusters from the axils of the leaves, on blood-red stalks, as long as the leaves, and of a delicate rose-colour. The seed-pods are oblong, and covered with white wool, and the paper in which the imported seeds were packed, was marked "woolly-podded Balsam, found growing on old ruins." Like the others, it will admit of being grown both in the open ground, and in pots in the green-house: when well grown in the latter situation, a greater degree of delicacy is attained, though considerable beauty is developed out of doors. Like all other succulent, strong growing annuals, the out-door plants succeed best when the summer is hot and comparatively dry. The flowers of this kind, when gathered, are said to last for several weeks without fading.

Impatiens glanduligera (Gland-bearing Impatiens, or, Touch-me-not).—This is one of the largest growing species, attaining as much as twelve feet in height when grown freely in a green-house, and from six to eight feet, under favourable circumstances, out of doors. It has a strong, fleshy, upright central stem, from which issue numerous branches, decreasing in size from the bottom upwards, and forming a thick, somewhat conical bush, with branches quite down to the ground. The leaves are large and lance-shaped, finely serrated on the edges, and growing in whorls round the stem; the flowers are large and numerous in terminal umbels; they are of a deep rosy-purple colour, which, however, sometimes varies in the seedlings to a lighter tint. The plants continue to bloom from the month of July, or earlier if reared early in the spring, quite through the summer and autumn months. It is a native of the Himalayan mountains, and so hardy that self-sown seedlings have been known to survive in the open air, through a mild winter. Being exceedingly handsome both in its habit and flowers, it is therefore deserving of cultivation in pots, under glass, in company with its near ally, the common garden Balsam (Balsamina hortensis), and in such situations its beauty becomes more fully developed; yet it may also be regarded as a very desirable half-hardy annual, adapted to situations where its size would not render it inappropriate. Dr. Royle raised this plant from Cashmere seeds.

Impatiens macrochila (Broad-lipped Impatiens, or, Touch-me-not).—This is an Himalayan species, growing eight or ten feet in height, and of about the same degree of hardihood as the other Himalayan species; that is, it will grow freely and flower in the open air; in fact, it is as hardy as any of this class of annuals, growing when protected only from frost; but it will also well repay cultivation in pots in the green-house, as a tender annual. It grows with an erect succulent stem, not so much branching as in I. glanduligera. The leaves are alternate on the stem, ovate-lanceolate, smooth, serrated on the edges, and furnished with glands at the base; the flowers are produced in umbels towards the points of the branches; they are large, pale rose-coloured, and showy. In habit, this species approaches I. tricornis.

Impatiens tricornis (Three-horned Impatiens, or, Touch-me-not).—This species grows four or five feet high. It has an erect stem, with alternate, hairy lanceolate leaves, without glands, from the axils of which the short racemes of flowers are produced; they are pale yellow, slightly spotted with red. It is an annual, introduced from the North of

India, and requiring treatment similar to the other species from the same districts.

IMPATIENS LONGICORNU (Long-horned Impatiens, or, Touch-me-not).— This is an erect, branched annual species, with linear-lanceolate elongated leaves, tapering to both ends, and flowers in axillary racemes. The flowers are yellow and fragrant. It is also called Impatiens odorata, I. picta, and I. leptoceras. It is a native of Nepal, and other parts of India.

IMPATIENS TRIFLORA (the three-flowered Impatiens, or, Touch-me-not).—This is a Ceylon species, with long linear-lanceolate leaves. It has pale red flowers. It may be raised in a hot-bed, and planted out in the open ground, as a half-hardy annual.

IMPATIENS TRIPETALA (the three-petalled Impatiens, or, Touch-me-not).—This species is found in Nepal, Sylhet, and other parts of India. It is a frame or half-hardy annual. It has oval-pointed leaves, situated opposite and ternate on the stem, and furnished with toothed margins. The flowers are large, of a lively red colour, tinged with yellow, and the plants have a pretty appearance when in blossom.

IMPATIENS DISCOLOR (the two-coloured Impatiens, or, Touch-me-not)—.A native of Nepal, with smooth ovate leaves, and yellow flowers. It is an annual of dwarf growth.

IMPATIENS PARVIFLORA (Small-flowered Impatiens, or, Touch-me-not).—A mere weed; a native of Siberia. It grows about two feet high with a branching succulent stem, alternate ovate leaves, and minute yellow flowers, spotted with red, produced in bunches, on long footstalks, above the foliage. It is an annual plant.

IMPATIENS COCCINEA (Red-flowered Impatiens, or, Touch-me-not).—A native of the East Indies, introduced many years ago, and probably lost. It has oblong oval serrated leaves, the stalks of which are furnished with numerous glands. The flowers are red, and are produced from the axils of the leaves, the most conspicuous portion being two broad segments which form the lower part of the flower. It is said to grow about two feet in height, but this is probably less than its real size.

IMPATIENS NATANS (the floating Impatiens, or, Touch-me-not).—This is a stove water-plant, or aquatic, very handsome when in flower, but very seldom met with. It has a piped stem floating in the water, and emitting roots from the joints. The parts that rise above the surface are erect and branching, rising two feet or more in height. The leaves are linear-lanceolate, alternate, and serrated. The flowers are large, beautifully variegated with red, white, and yellow. It is a native of the East Indies, growing in ponds and ditches of sweet water. It is an annual, flowering in July and August.

IMPATIENS CRISTATA (the crested Impatiens, or, Touch-me-not).—This annual species is a native of Chinese Tartary. It grows two or three feet high, with pubescent purplish stems, and lanceolate acuminated leaves. The flowers are yellow, with minute purple spots.

IMPATIENS SCAPIFLORA (Stemless Impatiens, or, Touch-me-not).—A dwarf stove perennial, inhabiting Bombay and Ceylon; from the former place it was imported, some years since, and introduced to the Glasgow Botanic Garden. The plant produces tuberous roots, in the way of some species of Begonia, and the leaves, which are heart-shaped, and smooth, bear considerable resemblance to some of those of that family; they rise from the root,—in other words, they are such as botanists term radical, in consequence of their proceeding from the radix, or root. The flower-stem, or scape, rises ten inches or a foot high, and produces six or eight large, delicate purple-rose, or pale lilac, coloured flowers, of a very peculiar form. It is called Impatiens bulbosa, and I. acaulis, as well as the name above given, and is a very handsome and interesting plant, requiring hot-house cultivation, and flowering in August and September.

The species of Impatiens consist of hardy and tender annuals, stove aquatics, and perennials. Some of those properly classed as tender annuals, admit of being cultivated as half-hardy annuals.

TREATMENT OF THE HARDY ANNUAL SPECIES.

THE plants comprised in this division, can scarcely be regarded as more than weeds in a garden, or they may be cultivated very sparingly as objects of curiosity on account of the peculiarity possessed by the seed-vessels. While, however, it is maintained that, as floricultural objects, they are not to be regarded as being attractive, yet, on close inspection, they will be found to be highly beautiful both in structure and colouring; and therefore, with this particular view, a plant or two of each may be grown. When once introduced to a garden, they are with difficulty entirely removed, as the scattered seeds, of which great numbers are borne by a plant, are deposited in the soil in all directions, and continue to grow up year after year, generally so numerous as to cover the surface of the ground. One way, therefore, of having quite a sufficient number of plants of these is to retain one or two of the seedlings, which are thus produced ; and this may always be done after the plants have been one year cultivated. In other cases, the seeds may be sown in the open ground in March or April, just in the same way as other hardy annuals. They prefer a moist situation; but, if the ground is very rich, they are liable to grow too strong, and produce large leaves, and less than their ordinary proportion of flowers. If a moderately free-growth can be secured, it will be sufficient for them, and they will be more likely to flower freely than if either extreme is allowed. Being of large growth, they require plenty of room.

The species which are to be referred to this division, are Impatiens Noli-tangere, I. biflora, or fulva, I. pallida, I. borealis, and I. parviflora.

TREATMENT OF THE HALF-HARDY ANNUAL SPECIES.

In this division, which, it has already been remarked, consists of plants which are properly speaking tender annuals, all the North Indian species which are introduced, as well as those from the cooler regions of other warm countries, may be included: those referred to are I. glanduligera, I. candida, I. macrochila, I. tricornis, I. rosea, I. longicornu, I. triflora, I. tripetala, I. discolor, and I. cristata; these, especially the first six, are exceedingly ornamental in their appearance when introduced to appropriate situations.

Like the hardy species, owing to the irritable nature of the seed-vessels, the seeds of these will disperse themselves, and frequently grow up in considerable numbers. This is not, however, the course which should be depended on for a supply of plants: a portion of the seeds of each should either be preserved or obtained, and from them the requisite supply of plants may be raised. The process to be had recourse to, in thus rearing a supply of plants from seeds, should be the same as that which it is found desirable to follow with other half-hardy annuals. The leading points of this process may be stated to consist in inducing early germination by the aid of a mild degree of artificial heat applied to the soil in which the seeds are deposited; and in order to effect this, it is found to be most convenient to sow such seeds in pots, and plunge the pots in a hot-bed frame; the young plants are then usually transplanted again into pots, in which they are retained until the period of planting out; or they are planted out in nursery-beds, where they are allowed to advance another stage of growth, and are then removed to their final situations. This course of treatment suits these species of Impatiens when intended for this mode of culture.

About the end of February, or some time in March, according to the period they are required to be in flower, the seeds may be sown thinly in pots or pans of light rich soil, covering them lightly with fine soil, and the pots may then be set in a hot-bed frame, where the heat is mild, or in a warm green-house: in either place, they will germinate soon enough. Plants raised at the latter period mentioned will be early enough to plant out by the time that danger of frost is past; the earlier ones being adapted for growing to a large size in pots, before planting out, with a view to have them in flower at an earlier period in the summer. When the seeds have vegetated, and the plants have fully expanded the two seed-leaves or lobes (called cotyledons), the seedlings may be carefully taken up, and potted singly in small pots, using light rich soil; they may then be returned to the frame, or green-house, as the case may be, when they should be placed near the glass: if occasionally supplied with water, as often as they require it, they will soon become strong and established plants; and from this, up to the time of planting out, which must not be until danger of frost is past, they will only require to be kept in a free healthy state by repotting them once or twice in the period, and removing them to a cold frame, and hardening them off by degrees, previously to exposing them fully to the open air. The repotting them once or twice during this period, is desirable as a means of keeping them from getting into a starved and stunted state, from which they would take some time to recover; further than this, it is not a point that must be regarded as absolutely requiring to be performed.

By the middle or end of May, if the weather is settled, or later if it is not so, the plants may be put out into the open ground; and after this has been accomplished, they require no other culture or care beyond that of placing a single upright stick to each plant, to support the main stem against the wind; and, perhaps, in very dry, hot weather, an occasional supply of water.

These plants prefer a situation where the soil is naturally cool and moist; for, being strong-growing succulent plants, and, for the most part, inhabiting damp situations, and where the climate also is moist, they appropriate a very considerable quantity of water. In situations which are in this respect naturally adapted to the plants, they require very little extra attention; but of course, as all gardens have not this quality, water must be applied to supply the deficiency. In this place, it may be well to remark, that in watering plants in the open ground, whenever it may be found to be requisite, a thorough soaking of the soil should be effected, and not a constant dilly-dallying application, little more than sufficient to moisten the surface. In applying it, the surface of the soil should be drawn back two or three inches deep, and extending a considerable distance around the plant; this should then be thoroughly wetted, as far down as the roots may be expected to penetrate, and after the moisture is a little soaked in, the surface soil should be returned again as lightly as possible, and allowed to remain without consolidation; in this way, the moisture is retained in the soil for a much greater length of time than when the soil is allowed to become at all compressed.

In consequence of the size attained by these plants, which will vary in different soils and situations, and under different circumstances, from three to six, or eight feet in height, and generally of about equal diameter, it is necessary to exercise some judgment in the selection of a situation which is appropriate for them. It will be evident that their size renders them unsuitable to any position where the space is limited. One of the most suitable positions for them, is as single specimens planted out on a lawn, or in a wide border filled with miscellaneous flowers. In either of these situations they would form very handsome objects, from the regularity with which their two or three times ramifying branches are produced on all sides; and as each of the branches, as well as all their numerous ramifications, are liberally furnished towards the tips with blossoms, they are by no means wanting in beauty, but form really elegant objects. It should, however, be made a matter of consideration, that the situations chosen for them are unaffected by winds; for it would be impracticable to afford the lateral branches any support without destroying the symmetrical beauty of the plants, and these, from their succulent nature, would be liable to become broken or disfigured if they were much exposed to the effects of rough winds.

With treatment something such as has been detailed, they will display considerable beauty, if the season be favourable; for it must not be denied that the season has considerable influence over the realization of this object. A warm, moist summer is the most suitable for them, and a cold one least of all adapted to bring out their blossoms. Moisture is a very essential element of their growth; they have been known to thrive equally well in shaded situations (not however *underneath* trees), and in exposed places, where sufficient moisture has been present. In peaty soil they succeed admirably, but they also grow finely in poor stony soil, provided they are well watered at the roots. Water is therefore to be regarded as the most essential requisite in their cultivation.

It may just be worth while to remark that in saving seed from any of the plants which are cultivated in the open ground, those plants should be selected which have appeared to thrive best. Seedling plants, it is well known, vary to a certain extent in their constitution and hardiness, and hence any little difference in this respect which may be observed should be made the most of, with a view to produce a race somewhat more hardy than the plant is naturally found to be. By following up this course for a few seasons, there can be no doubt that a race would be secured which would thrive better in the open ground than those raised from plants cultivated in the warmer temperature of a stove or green-house. In fact, this is the principle by which to bring about what is termed acclimatising.

TREATMENT OF THE TENDER ANNUAL SPECIES.

This division properly includes the Indian species, glanduligera, macrochila, candida, tricornis, longicornu, rosea, coccinea, tripetala, and discolor, as well as triflora, and cristata, and all the species which are natives of warm climates.

The leading features of the treatment they require, consist in sowing the seeds in a warm temperature, maintaining a moist and moderately warm atmosphere for the plants to grow in, supplying them with plenty of rich soil, and watering with a liberal hand, especially as they advance towards maturity. Under treatment embracing these features, they will develop themselves to their utmost extent, and become very ornamental.

In detailing this course of cultivation, we commence with the sowing of the seeds: the mechanical part of the operation may be disposed of in few words:—Select pots of convenient size, and some light soil moderately dry; fill the pots three parts full, consolidating the soil by shaking the pots and making the surface level; sow the seeds thinly (that is to say, a little distance apart), on this surface, and cover them with about half an inch of soil, also levelled: the operation is then completed. Next, as to situation; a hotbed frame is the most suitable, where they may be plunged to the rim, in a medium warmed to about 80°: in most gardens it is found convenient to have such a bed made, of suitable size, as it is adapted for raising most kinds of seeds, as well as for rooting cuttings; but where such a bed is not provided, a plant stove, a cucumber frame, or a warm green-house, may be made to supply its place. It may, however, be remarked, that to raise tender annuals, and rear them to any degree of perfection, a hotbed will be indispensable up to the time of green-house plants being removed to the open air, when the annuals are generally required to be large enough to occupy their place. A hotbed being then indispensable, it will be sufficient to remark of it that it should be made precisely as a cucumber bed is made, only, as it does *not require to be quite so hot*, it may be formed of materials somewhat more spent than would be deemed proper for cucumbers. The inside of the hotbed frame should be provided with a few inches in depth of some light material for plunging the pots in, such as sawdust, old tan, ashes, &c. Until the seeds vegetate, but little water or air need be given; but as soon as the seeds appear through the surface of the soil, they must be regularly watered whenever the soil becomes dry, and air must be admitted in small quantities by tilting up the frame at the back a half-inch, an inch, two inches, and so on, according to the state of the weather; always making it a rule to open the frame a little, to let off the confined steam, every day; and at other times, the internal temperature must be the index to regulate the amount of external air admitted: enough should be admitted to keep the internal temperature from rising above or falling much below 80°. The seeds should be sown in March to produce plants to bloom in June and July; and later, to keep a succession of plants blooming through the autumn. It is not of much use to sow earlier, as the trouble of raising them at that season is much increased, without an adequate return. The pots should be kept near the glass, so that the seedlings may not become "drawn," as the technical phrase is; that is, produced with long weakly stems.

When the seeds have vegetated, and have perfected a few, say three or four, leaves, they should be removed from the seed-pots to some other situation: they are best potted at once, singly, into small pots, as they do not then require to be moved subsequently beyond shifting them from pot to pot, an operation which may be performed without checking the progressive growth and advancement of the plants. The soil in which they are potted should consist of light rich material; such as a mixture of turfy loam and leaf-mould will be appropriate: they should be set deep in the soil, a course not advisable with the generality of plants, but found to be of some use with plants of this nature, which throw out roots freely from the covered part of the stem; when potted, the seed lobes, called cotyledons, may nearly rest upon the surface of the soil. As soon as this operation is completed they are to be returned to the frame, and in this situation they are to be grown subsequently, until they grow up to a size too large to be accommodated in a structure of this kind. The atmosphere of this frame must be kept moist, for Balsams thrive a great deal on moisture; in fact, it is impossible to grow them to any degree of perfection, unless they are grown in an atmosphere moistened almost to saturation. The temperature should be maintained as nearly as practicable to 70° Fahrenheit by day, and 60° or 65° by night, allowing a rise of eight or ten degrees by sun-heat in the day time; whenever the temperature rises above this latter point, air must be admitted sufficient to reduce the temperature to the desired standard; the principal use of the operation of admitting air is thus to regulate the temperature, although it may be desirable to open the frames also for another purpose, namely, to allow the accumulated moisture and steam to pass off; for this purpose a *little* air may be admitted every morning, without regard to the temperature; and subsequently, throughout the day, both of these points should be kept in view. The frames should be closed early in the afternoon. Whenever water is required, either to moisten the soil or atmosphere, it should be used of the same temperature as that of the bed, or as near this as may be. By this precaution the plants are saved the check which they would experience, if cold water were brought in contact with them.

In this manner the plants are to be grown on, repotting them frequently into pots two or three sizes larger than the ones they are growing in, and still using the same rich open compost as before, which may be composed of rather less leaf-mould and more loam as they grow towards maturity. For the purpose already adverted to, namely, to prevent the plants from becoming "drawn," they should be kept elevated as near the glass as possible; and as they advance in stature, this will render it necessary either to elevate the frame or to sink the pots down in the centre; whichever plan is followed, the same principles must be kept in view; namely, that while the plants are allowed sufficient room to grow without being crippled by contact with the top of the frame, they may not be removed farther from the glass, or rather from the light, than is really necessary. The same attention to moisture and heat must be observed throughout.

By the time the plants become too large to be accommodated in the frames, the green-house will admit of being either partially or wholly cleared of its regular denizens, and they must then be accommodated in it. Here they must be kept in a free growing state, by keeping the house rather close, and maintaining a moist, warm atmosphere, as long as it may be thought desirable to continue growing them to a larger size. When they reach a size which may be as large as is desirable, they should be prepared for flowering by more mature treatment, that is, by giving them rather less moisture in the atmosphere, but as much heat, and a full supply of water to the soil. Continuing this without fail, they will soon arrive at a blooming state; and they may then be retained a much longer period in bloom by a more free admission of air, keeping the temperature lower, and the atmosphere somewhat drier than before. If a few blooms happen to be produced at an early period of growth, they should be removed, as a much better ultimate bloom will thus be secured.

Plants grown thus, as single specimen plants, require no staking or any other support; they will consist of a single erect stem, furnished on all sides with branches, themselves branching out two or three times, the whole forming large conical masses six, eight, or more feet in height, and as much in diameter at the base. Some of the species can hardly be grown less than this, to exhibit their peculiar ornamental appearance ; I. rosea is almost the only smaller kind, among the more ornamental of the species. In this class, I. glanduligera, I. candida, I. longicornu, and I. rosea, are the most handsome.

TREATMENT OF THE STOVE AQUATIC, AND PERENNIAL SPECIES.

IMPATIENS NATANS is an aquatic species, strictly speaking. All the species naturally love humidity, and thrive when under its influence, but this actually requires to be grown in water, its tortuous branching stems floating on the surface. Being an annual species, it requires to be raised from seeds every spring ; the latter end of February or the beginning of March will be a suitable time. They may be sown in pots of light loamy soil, and the pots set into pans filled up with water, which should be frequently changed ; these pots may either be set in a hothouse, or in a hot-bed frame. When the plants are an inch or two high, they should be planted singly into large pots filled with rich loamy soil ; and these pots should be set into a pan or cistern of water, deep enough to cover the pot a few inches. The depth of the pots should be regulated to the growth of the plants. When they are first set in, they must be adjusted so that the tops of the plants are above the surface ; and as they grow the pots may be lowered, so as ultimately to be a few inches beneath the surface : the stems will then float about on the surface, and assume their natural characters. It is proper to remark, that these pans or cisterns should be situated or placed in a warm and open part of the hot-house ; and further, the water should be moderately heated, that is, to about the same temperature as the air whenever fresh or additional supplies may be required by the plants. The frequent change of this water will not be necessary, but it should be changed sometimes, to keep the supply in a clean and sweet condition ; and it is on these occasions of change especially, that it is desirable to have recourse to the practice of warming that which is applied. From the impracticability of shifting them into larger pots, after they have made any advance in their growth in the water, it is a necessary point to plant them at once into pots of considerable size, large enough to enable them to maintain and complete their growth. Such as an 11-inch or 12-inch one will be large enough ; and they will then require to be set either into pans, large enough to afford a surface of water sufficient for the branches ; or into cisterns, when they might occupy as much room as they require.

The only remaining species for consideration is the I. scapiflora, a perennial stove species of dwarf habit, and producing tuberous roots. The leaves of this plant die away during the winter, and at this season the soil should be kept dry about them, and they should be set away in a cool, dry situation, till the spring. In the spring, they must be brought out, gradually supplied with water, and brought into a course of culture, by placing them in the influence of warmth. As soon as they show signs of growth, they should be repotted; the pots in which they are grown need not be of large size—an 8-inch one for a strong plant will be sufficient, but they require to be well drained : the soil may be an equal mixture of turfy loam and turfy peat, principally in roughish lumps, and the tuber should be placed just below the surface of the soil. When they are in full growth they may be submitted to the full influence of heat, and moisture, and light, and then, with the ordinary routine ot treatment, they will grow to very great perfection. The plants will require moderate supplies of water whenever the soil becomes dry; but, although when in a free growing state they will absorb and appropriate a considerable proportion, the supplies must not be immoderate, or more than will keep the soil in a regularly moistened condition. This course of treatment may be continued until the time of flowering, when the plants may be removed to a warm green-house, where the flowers will last longer than if continued in the hot, moist atmosphere, which produced them. After flowering, the plants will have attained their mature growth, and then the process of ripening off must be commenced, by gradually lessening the applications of water at the roots, and keeping the plants in a somewhat drier atmosphere. As they die off they may also be taken to a cooler temperature. When the decay of the leaves, and the maturation of the roots, are thus found to be completed, they may be stored away in a dry, cool place, free from frost, along with Achimenes, Gesneras, and similar plants, until the return of spring, when they may be brought out and subjected to a similar course of treatment.

GENERAL REMARKS.

THE seeds of the annual species are produced very plentifully; and a sufficient quantity should be preserved for the purpose of raising a supply of plants. The capsules should be gathered before they become quite ripe, as they will not, when in the latter case, bear touching without bursting, and, perhaps, scattering the seeds; and, in order to keep the kinds distinct, they should be dried in separate loose bags, or the bursting of the pods, as they ripen, will scatter the seeds, and the different kinds will become mixed. A succession of plants must be kept up to flower through the autumn, by sowing, at two or three different times, during the spring.

SPIRÆA DOUGLASII.

(*Hooker.*)

MR. DOUGLAS' SPIRÆA.

Many of the Spiræas are well known as most beautiful, hardy flowering shrubs. The present species is one of the handsomest among them, and has the recommendation of continuing to produce flowers for a great length of time during the summer. A specimen flowered most beautifully in the Clapton nursery, in July of the present year ; and Mr. Murray, the curator of the Glasgow Botanic Garden, states, " that after the flowers of all other shrubs have passed, this is found in perfection : last year it was fine, even when the frost came on in October."

It is quite a hardy shrub, forming a handsome bush, ultimately reaching four or five feet in height. It produces flowers, however, much smaller, and we have seen the branches which have been layered for the purpose of propagation, producing the blossoms abundantly. It is deciduous, that is, shedding its leaves during the winter ; the leaves are elliptic, coarsely and unequally jagged, or saw-edged, near the upper end, and somewhat hoary beneath. The flowers are small, of a rosy lilac colour, and produced in dense oblong clusters at the termination of the shoots, and from the axils of the upper leaves, the whole forming a large loose pyramidal spike. These flowers are produced from July to October. It was found by the lamented and indefatigable collector, Mr. David Douglas, on the north-west coast of America : it was not, however, introduced by him ; but plants have been raised by Mr. Murray of Glasgow, from seeds sent to him by Dr. Tolmie, who gathered them at Fort Vancouver. Sir W. Hooker has commemorated the name of Douglas in the specific title.

Hardy plants of any considerable beauty have been lately of much less frequent introduction than green-house and stove plants; but in this case, we have a perfectly hardy plant, of very great beauty, consequently its value is far more likely to be appreciated, than if its constitution were more tender. It is, in fact, just the very plant for the amateur, who possessing a garden, has not at the same time the means of growing plants of a delicate and tender nature.

It is of the easiest culture. Any moderately rich garden soil would grow it to perfection ; and it may be increased rapidly both by cuttings and by layers. A single plant of it would look very handsome planted out as a specimen on a neatly kept lawn.

THE FORM OF THE TULIP.

It will be recollected by the readers of the "*Gardener and Practical Florist*" that the perfection of form for a Tulip was set down at from one-third to one-half a hollow ball. It seems that, considering all the other flowers have assigned to them a positive point, this loose way of defining a form which is to be perfection gave rise to so-called improvements, and that some other writer or writers have asserted that half a ball was the perfect standard. Now this involves a point which upsets itself, and upon principle must be wrong. That more than half a ball is a fault upon the principle laid down is certain, and will be obvious to all who consider the character of the flower. For instance, the Tulip has to exhibit all its inside beauties; if you look into half a ball you can see every thing ; if it be more than half a ball, the portion beyond the half ball must turn over the edge inwardly, and thus some of the beauties are hidden which the very first object is to show in perfection. Now, if the flower be less than halt a ball, the entire inner surface will be seen even better than it will if it be one shade more ; and down to one-third of the ball the facility of viewing the inner surface is increased ; so that, if we suppose the author of the properties of these flowers had laid down a positive line from which to depart either way would be to detract from perfection, he must have said, instead of from one-third (which is four-twelfths) to one-half (which is six-twelfths), he must have said five-twelfths, which is half way between his extreme points of perfection; but it is in the easiest way proved that there is not a point of difference between these three points, and, of course, the shades between them. For instance, the half ball will show all the beauty, even to the fine feathering on the edge, although the edge is nearly, if not quite, upright. The richness of the surface, and the reflected light in any segment of a sphere, gives a much more beautiful effect than any other form. This, however, being acceded to, and the old and exploded fancy for a flat bottom with straight sides being given up to the improved notion of a hollow ball, we have only now to examine the effect of less than a half ball. The part got rid of, be it remembered, is the edge, which being nearly upright, the feather is seen better, being more plainly developed by its oblique position; thus, although the flower is losing something in depth, it gains in the development of its beautiful stripes. This holds good down to one-third, which gains in the point of exhibiting its feathered edge, and loses in the depth and proportionate quantity of inner surface, the one fully compensating, by its better exposition of stripes, for the assumed loss of depth; but, after the third, that is to say, any point below a third, loses in richness, and does not compensate in any way, because its flatness detracts too much from the general character of the flower. But there is another way in which to look at this important point. Suppose a flower to develop its stripes properly at one-third of a hollow ball, which would be its form when fully opened; that same flower will gain in colour by being rather less open, and would form more than a third. It would lose a trifle in the non-development of its edges, and that is a compensating fault for its closing. If it did not open beyond a half, the same thing applies in a more extended degree. But the flower that will open to one-third without quartering, (which is of itself a grand quality of the Tulip, and which none but a broad-petalled, well-made flower will,) is as rich, taking all the points, as any others that can be found. We therefore come to the conclusion, (founded on the principles which have been the basis of all the properties of all the flowers):—First, that a Tulip of one-third of a hollow ball would, so far as that one quality is concerned, be PERFECT. Secondly, that a Tulip five-twelfths of a hollow ball, though it lost a trifle in the development of its beauty, gained in the appearance of its depth as much, and is, therefore, so far as that point is concerned, PERFECT. Thirdly, that if it were a half ball, losing one way what it gained another, it would still be PERFECT. But lastly, that if it were less than a third, or more than a half, it would be IMPERFECT.

THE CROCUS AND ITS CULTURE.

ALTHOUGH the Crocus appears one of the most common of our spring flowers, and is scarcely thought of, except while in bloom, there is a great variety of which little is generally known, and seed-sowing for new sorts would be an inviting and gratifying occupation. For this purpose, we take from a volume of the "Horticultural Transactions" some few portions of an elaborate paper by A. H. Haworth, Esq. We have greatly abridged even the portions we have taken, but the paper will be found of a readable length, and highly useful to those who wish to pursue the raising of seedlings.

"The seeds of Crocuses are best sown immediately after being gathered, in light, dry earth, that will neither bind, nor retain moisture long: but it is not necessary that it should be rich, as that might encourage a too redundant, and fatal humidity.

"Large pots or pans, or small shallow boxes of such soil, with a sufficiency of holes and potsherds at the bottom, for the purpose of draining off with certainty all superfluous moisture, are the properest receptacles for these seeds; which should be sown thinly (for almost every one will vegetate), and not covered at the time of sowing more than half an inch with the mould.

"The most eligible aspect, or situation, for the seminal boxes, until the autumnal rains set in, is a moderately shady, yet unsheltered one; permitting them to receive all the influence of the weather, except such heavy showers as would wash bare the seeds.

"As soon, however, as the autumnal rains commence, it will be highly advantageous to remove the boxes to a warm aspect, and to protect them from all excessive rains, frosts, and snows, by the occasional shelter of a garden frame: allowing them, nevertheless, the benefit of the full air at other times, but more especially after the seminal leaf (for they have but one, being monocotyledonous plants) eager to commence the career of life, urges its fine setaceous point above the surface of the earth. This occurs sometimes about the end of the year, but oftener in earliest spring. After this, their birth, if I may use the expression, it is quite essential that they should have complete exposure to the air, even in frosty weather; for they are prodigiously hardy with respect to cold; screening them, however, occasionally, like early Radishes, with loose straw, from other injurious effects of frost; so as to prevent their being raised out of their infantile beds by its baneful effects; but remove all the straw-covering again as soon as the frost is over.

"In this manner may the young Crocuses be treated until the sun acquires sufficient power to dry the earth in their boxes, so as to require daily waterings; for they must have gentle rose-waterings, whenever they are quite dry. It will be then found advantageous to remove them to a cooler, but not sheltered situation; and here they may remain until their leaves die down; giving them, as just hinted, at all times, and in every situation, while their leaves are growing, such discretional rose-waterings, when the sun is not shining, as they may reasonably appear to require; but never until the earth they grow in becomes dry; nor any whatever after their leaves begin to look yellow.

"After this period, it is necessary to defend them from all humidity, except dews and gentle rains, until the end of August or beginning of September.

"From weeds, and from worms, from slugs, and snails, it is almost needless to observe, they should constantly be kept as clear as possible; and if the surface of the earth in their boxes is occasionally stirred with the point of a knife, or fine piece of stick, it will never fail to be attended with beneficial effects, and invigorate the bulbs; operating, no doubt, as a sort of hoeing, and like that important practice, as the writer of this paper conceives, proving salubrious to vegetables of every denomination, not only by lightening the soil, but by admitting new accesses of atmospheric air towards their roots; and thereby facilitating, and stimulating their absorbent inspiration of its oxygen; without a due supply of which, all vegetables, as well as animals, eventually become feeble and sick.

"If, notwithstanding the precaution of thinly sowing the seeds, the plants in any of your seminal boxes should have grown so thickly together, as to have incommoded each other, it will be desirable to have such taken up, and replanted immediately, further asunder, in fresh earth, and about three quarters of an inch deep. But if they are not too crowded, they will require no shifting, this, their first autumn; but merely about a quarter of an inch of fresh mould sifting over them, previously stirring and cleaning the surface of the old from moss and weeds, and observing not to bury the young bulbs, not yet so large as lentils, deeper than three quarters of an inch, or an inch at the most.

"The second season requires exactly the same management as the first. But as soon as their second year's foliage has passed away, the roots should all be taken up, and replanted again the same, or following day, into fresh earth, of the same kind as before, about an inch deep, and as much apart, and treated as above.

"Nor does the third season demand any alteration in their management, sifting over them in autumn half an inch of fresh earth.

"The spring following, if they have been duly attended to, most of them will show flowers (a few, perhaps, having done so the season before) in the midst of their fourth crop of leaves; fully rewarding with the cheering colours of their new faces, all the preceding assiduity and care.

"The seedling plants, after they have flowered, may to all intents and purposes be considered and treated as old ones; and after their leaves have passed once more away, may be taken up, and replanted, in the open borders of the garden for good, at about two inches apart, and as many deep; they may be placed as fancy requires, either in groups, patches, edgings, or full beds, and will flower strongly the ensuing spring."

SELF-INSTRUCTION FOR YOUNG GARDENERS.*

Poor Loudon's posthumous work on this subject has appeared, and with it a biographical notice of the writer, whose labours have never been half appreciated; and many a reader has carelessly perused pages which have been written amid great bodily pain, and been the result of indomitable perseverance. The life of Mr. Loudon has been one of incessant labour, performed under every conceivable disadvantage. Affliction of body, enough to have destroyed the mind of strong men, seems to have scarcely checked his onward career. Whatever he laid out as his work, was conquered under circumstances that would have defeated ninety-nine men of every hundred; and nobody, not even his intimate acquaintances, will have formed the most remote idea of the trials and sufferings he has undergone, until the perusal of the outline or sketch which precedes the "Self-Instruction for Young Gardeners" shall have made the reader familiar with the leading events. Mrs. Loudon, who is the biographer on this occasion, has placed before the world the true character of her late husband, who kept a journal for thirty years of his life, and left ample material from which to gather facts, with which she may have been personally unacquainted; and, whatever may be the merit of the work itself, the example of industry and perseverance set by the author is in itself a lesson worth all the price of the book. We do not, for many reasons, choose to look critically at a volume published under present circumstances. Those who have not possessed the works of Mr. Loudon ought to purchase this; for it is a key to all his other writings, and will guide them to those which are best adapted for their use. Those who have his works have need of this; for it is important in many respects: it is the first which makes us acquainted with his real claims on the public, who, albeit a most ungrateful recipient of benefits, owe him much. It is not expected that we should coincide with all Mr. Loudon has written: men differ widely in opinion upon subjects much less intricate than Horticulture, and it would be strange indeed, if, amidst the library of books which Mr. Loudon has written upon all sorts of subjects, there should not be some to which other writers refuse their sanction; but few men deserve better of his fellows. If there was a single error committed in his whole useful life, it was undertaking the editorship of the "Gardener's Gazette;" for it detracted from his fame to take charge of a newspaper, at the very height of popularity, thrown up without notice, and in disgust, by the very founder of it, because the owners attempted to control his pen. There was a moral certainty of its immediate decline; no talent could have saved it; because, notwithstanding all that was said to disparage the original editor, many of the readers sympathized with him, and threw up the paper to show their abhorrence of the transaction. It was no disparagement to Mr. Loudon that the paper rapidly lost its influence, its circulation, and its character; some thousand readers, who had taken it because of its uncompromising, and by some called personal, tone, were not likely to be satisfied with the gentleness of Mr. Loudon. This was the only error of his literary career. It was placing himself in a questionable position, and the world thought it was making himself a party to crush the independence of a rival; though those who knew Mr. Loudon are quite aware it was a pure matter of business, reluctantly engaged in, and unfortunate in its result. It is only fair to the deceased to say,—for we have it from the best authority,—that before he undertook the office, he urged, with all his argument, the necessity of coming to an arrangement with the original editor, in preference to anything they could do. The following passages are from the biographical sketch, and they will be read with interest. We pass over much that is interesting, for it is all worth transcribing, though, after what we have said, it would be most unfair.

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* Self-Instruction for Young Gardeners, Foresters, Bailiffs, Land-Stewards, and Farmers. By the late J. C. Loudon, F.L.S. H.S. &c. With a Memoir of the Author. London: Longman and Co. Paternoster Row.

"Among all the studies which Mr. Loudon pursued while in Edinburgh, those he preferred were writing and drawing. The first he learned from Mr. Paton, afterwards father to the celebrated singer of that name; and strange enough, I have found an old letter of his to Mr. Loudon, sen., prophesying that his son John would be one of the best writers of his day—a prophecy that has been abundantly realized, though certainly not in the sense its author intended it. Drawing was, however, his favourite pursuit; and in this he made such proficiency, that, when his father at last consented to his being brought up as a landscape-gardener, he was competent to take the situation of draughtsman and assistant to Mr. John Mawer, at Easter Dalry, near Edinburgh. Mr. Mawer was a nurseryman, as well as a planner (as the Scotch call a landscape-gardener); and while with him, Mr. Loudon learned a good deal of gardening generally, particularly of the management of hot-houses."

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"In 1803 he first arrived in London. The following day he called on Mr. Sowerby, Mead Place, Lambeth, who was the first gentleman he visited in England; and he was exceedingly delighted with the models and mineralogical specimens, which were so admirably arranged as to give him the greatest satisfaction, from his innate love of order; and he afterwards devised a plan for his own books and papers, partly founded on that of Mr. Sowerby, but much more complete."—Pp. x.—xii.

We have frequently differed from Mr. Loudon in regard to matters of taste, and in nothing so much, perhaps, as his partiality for deciduous trees. We are informed that—"When Mr. Loudon first arrived in London, he was very much struck with the gloomy appearance of the gardens in the centre of the public squares, which were then planted almost entirely with evergreens, particularly with Scotch pines, yews, and spruce firs; and, before the close of the year 1803, he published an article in a work called 'The Literary Journal,' which he entitled, 'Observations on laying out the Public Squares of London.' In this article he blamed freely the taste which then prevailed, and suggested the great improvement that would result from banishing the yews and firs (which always looked gloomy from the effect of the smoke on their leaves), and mingling deciduous trees with the other evergreens. He particularly named the Oriental and Occidental plane trees, the sycamore, and the almond, as ornamental trees that would bear the smoke of the city; and it is curious to observe how exactly his suggestions have been adopted, as these trees are now to be found in almost every square in London."—P. xiii.

To our mind, it occurs, that if anything spoils the squares of London, it is the prevalence of deciduous trees, which during the winter months are black and gloomy beyond description. This, however, is so much a matter of taste and individual opinion, that we hardly ought to notice it. We proceed, therefore, to other subjects.

"During the greater part of the year 1806 Mr. Loudon was actively engaged in landscape-gardening; and towards the close of that year, when returning from Trê-Madoc, in Carnarvonshire, the seat of W. A. Madocks, Esq., he caught a violent cold, by travelling on the outside of a coach all night in the rain, and neglecting to change his clothes when he reached the end of his journey. The cold brought on a rheumatic fever, which settled finally in his left knee, and, from improper medical treatment, terminated in a stiff joint; a circumstance which was a source of great annoyance to him, not only at the time when it occurred, but during the whole of the remainder of his life."—Pp. xvii. xviii.

The following is, perhaps, the most interesting part of Mr. Loudon's life, and shows how thoroughly indefatigable he was in all he undertook. It is a long extract, but important in all respects.

"The Continent, after having been long closed to English visitors, was thrown open in 1813 by the general rising against Napoleon Bonaparte, and it presented an ample field to an inquiring mind like that of Mr. Loudon. Accordingly, after having made the necessary preparations, he sailed from Harwich on the 16th of March. He first landed at Gottenburg, and was delighted with Sweden, its roads, its people, and its systems of education; but he was too impatient to visit the theatre of war to stay long in Sweden, and he proceeded by way of Memel to Konigsberg, where he arrived on the 14th of April. In this country he found everywhere traces of war: skeletons of horses lay bleaching in the fields, the roads were broken up, and the country houses in ruins. At Elbing he found the streets filled with the goods and cattle of the country people, who had poured into the town for protection from the French army, which was then passing within two miles of it; and near Marienburg he passed through a bivouac of 2,000 Russian troops, who, in their dress and general appearance looked more like convicts than soldiers. The whole of the valley between Marienburg and Dantzic he found covered with water, and looking like one vast lake; but on the hills near Dantzic there was an encampment of Russians; the Cossacks belonging to which were digging holes for themselves and horses in the loose sand. These holes they afterwards covered with boughs of trees, stuck into the earth, and meeting in the centre as in a gipsy tent; the whole looking, at a little distance, like a number of huts of the Esquimaux Indians. He now passed through Swedish Pomerania; and, on approaching Berlin, found the long avenues of trees leading to that city filled with foot passengers, carriages full of ladies, and waggons full of luggage, all proceeding there for protection; and forming a very striking picture as he passed through them by moonlight.

"He remained at Berlin from the 14th of May to the 1st of June, and then proceeded to Frankfort on the Oder. Here, at the *table d'hôte*, he dined with several Prussian officers, who, supposing him to be a Frenchman, sat for some time in perfect silence: but on hearing him speak German, one said to the other, 'He must be English;' and, when he told them that he came from London, they all rose, one springing over the table in his haste, and crowded round him, shaking hands, kissing him, and overwhelming him with compliments, as he was the first Englishman they had ever seen. He then proceeded through Posen to Warsaw, where he arrived on the 6th of June.

"Afterwards he travelled towards Russia, but was stopped at the little town of Tykocyn, and detained there three months, from some informality in his passport. When this difficulty was overcome, he proceeded by Grodno to Wilna, through a country covered with the remains of the French army, horses and men lying dead by the road-side, and bands of wild-looking Cossacks scouring the country. On entering Kosnow three Cossacks attacked his carriage, and endeavoured to carry off the horses, but they were beaten back by the whips of the driver and servants. At Mitton he was obliged to sleep in his britzska, as every house was full of the wounded; and he was awakened in the night by the cows and other animals, of which the inn-yard was full, eating the hay which had been put over his feet to keep them warm. He reached Riga on the 30th of September, and found the town completely surrounded by a barricade of waggons, which had been taken from the French. Between this town and St. Petersburg, while making a drawing of a picturesque old fort, he was taken up as a spy; and, on his examination before the prefect, he was much amused at hearing the comments made on his note-book, which was full of unconnected memoranda, and which puzzled the magistrates and their officers excessively when they heard it translated into Russ.

"Mr. Loudon reached St. Petersburg on the 30th of October, just before the breaking up of the bridge, and he remained there three or four months; after which he proceeded to Moscow, where he arrived on the 4th of March, 1814, after having encountered various difficulties on the road. Once, in particular, the horses in his carriage being unable to drag it through a snow-drift, the postilions very coolly unharnessed them and trotted off, telling him that they would bring fresh horses in the morning, and that he would be in no danger from the wolves, if he would keep the windows of his carriage close, and the leather curtains down. There was no remedy but to submit; and few men were better fitted by nature for bearing the horrors of such a night than Mr. Loudon, from his natural calmness and patient endurance of difficulties. He often, however, spoke of the situation he was in, particularly when he heard the howling of the wolves, and once when a herd of them rushed across the road close to his carriage. He had also some doubts whether the postilions would be able to recollect where they had left the carriage, as the wind had been very high during the night, and had blown the snow through the crevices in the curtains. The morning, however, brought the postilions with fresh horses, and the remainder of the journey was passed without any difficulty.

"When he reached Moscow, he found the houses yet black from the recent fire, and the streets filled with the ruins of churches and noble mansions. Soon after his arrival news was received of the capture of Paris, and the entrance of the allied sovereigns into that city; but the Russians took this intelligence so coolly, that though it reached Moscow on the 25th of April, the illuminations in honour of it did not take place till the 5th of May. He left Moscow on the 2d of June, and reached Kiov on the 15th. Here he had an interview with General Rapp on account of some informality in his passport. He then proceeded to Cracow, and thence to Vienna; after which he visited Prague, Dresden, and Leipsic, passing through Magdeburg to Hamburg, where he embarked for England, and reached Yarmouth on the 27th of September, 1814."—Pp. xxi.—xxiv.

The account of Mr. Loudon's marriage is perfectly romantic. Mrs. Loudon touches upon the subject lightly, but it is curious as well as interesting. She says:—

"About this time Mr. Loudon formed his first acquaintance with me. My father died in 1824; and, on the winding up of his affairs, finding that it would be necessary for me to do something for my support, I had written a strange wild novel, called 'The Mummy,' in which I had laid the scene in the twenty-second century, and attempted to predict the state of improvement to which this country might possibly arise. Mr. Loudon chanced to see the review of this book in the 'Literary Gazette,' and, as among other things I had mentioned a steam-plough, it attracted his attention, and he procured the work from a circulating library. He read it, and was so much pleased with it, that he published, in the 'Gardener's Magazine' for 1828, a notice of it under the head of 'Hints for Improvements;' and he had from that time a great desire to become acquainted with the author, whom he supposed to be a man. In February 1830 Mr. Loudon chanced to mention this wish to a lady, a friend of his, who happened to be acquainted with me, and who immediately invited him to a party, where she promised him he should have the wished-for introduction. It may be easily supposed that he was surprised to find the author of the book a woman; but I believe that from that evening he formed an attachment to me, and, in fact, we were married on the 14th of the following September."—P. xxxv.

We shall return to this work, for there is much to notice. The passage in which allusion is made to his connexion with the 'Gardener's Gazette' is short.

"In 1839 Mr. Loudon began to lay out the Arboretum so nobly presented by the late Joseph Strutt, Esq., to the town of Derby. In the same year he published his edition of 'Repton,' and his 'Second Additional Supplement to the Hortus Britannicus.' In 1840 he accepted the editorship of the 'Gardener's Gazette,' which, however, he only retained about a year."—P. xl.

With one more extract we shall close for the present. It is the closing scene of his life, and would we could have said of his amiable wife's troubles.

"On Wednesday, the 13th of December, 1843, he sent me into London to see the assignees, and to endeavour to bring them to terms, our kind and excellent friend, the late Mr. Joseph Strutt, having promised to lend us money for that purpose. The assignees, however, refused to accept the terms we offered, unless Mr. Loudon would also give up to them his edition of 'Repton,' which he was most unwilling to do, as the debt on that work was comparatively small; and, consequently, he had reason to hope, that the income produced by it would be soonest available for the support of his family. He was accordingly very much agitated when I told him the result of my mission; but he did not on that account relax in his exertions; on the contrary, he continued dictating 'Self-Instruction' till twelve o'clock at night. When he went to bed he could not sleep, and the next morning he rose before it was light. He then told me he had determined to sacrifice his edition of 'Repton' in order to have his affairs settled before he died; adding, 'but it will break my heart to do so.' He repeated, however, that he would make the sacrifice, but he seemed reluctant to send me into town to give his consent; and most fortunate was it, as, if I had gone to town that morning, I should not have been with him when he died. He now appeared very ill, and told me he thought he should never live to finish 'Self-Instruction;' but that he would ask his friend Dr. Jamieson, to whom he had previously spoken on the subject, to finish the work for him. Soon after this he became very restless, and walked several times from the drawing-room to his bed-room and back again. I feel that I cannot continue these melancholy details: it is sufficient to say, that, though his body became weaker every moment, his mind retained all its vigour to the last, and that he died standing on his feet. Fortunately, I perceived a change taking place in his countenance, and I had just time to clasp my arms round him, to save him from falling, when his head sank upon my shoulder, and he was no more."—Pp. xlvii. xlviii.

Let us hope that the present work may prove a fortunate one for the widow. We ought, perhaps, to have gone into some of the details, and described it; but it will be sufficient for the present occasion to say, that it is like all the author's efforts; the gardener only has to make himself master of the lessons to become a scholar, as well as a gardener; there is advice upon all the subjects that can interest him, and if he can but store his mind with the knowledge which the book imparts, he will be fitted for the highest station he can aspire to. The life of the author possessed such interest that we could not shorten our extracts, and the few examples we have given will even now present but a faint idea of his labours in the cause of British Gardening and Gardeners.

GRIFFINIA HYACINTHINA.

(Ker.)

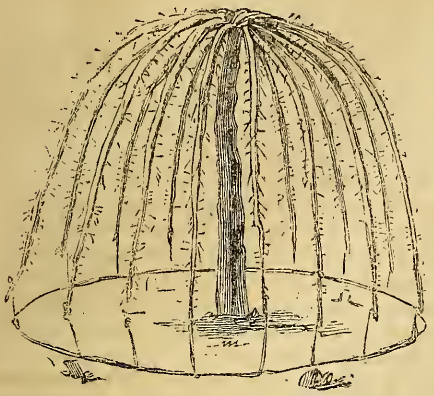
THE HYACINTHINE, OR VIOLET-COLOURED GRIFFINIA.

This plant was introduced into this country from Brazil in 1815, and is consequently not a new plant, though one of considerable rarity and beauty. It belongs to the natural family of Amaryllids, and, unlike the majority of the plants of the order, the prevailing colour of its flowers is a fine ultramarine blue, of a peculiarly soft and rich tint.

It is very nearly related to the genus Amaryllis; indeed, the resemblance is so close, that on its first introduction it was referred to that family; and it was only found necessary to remove it, and constitute a new genus after the introduction of other species.

The present plant is a bulbous one, requiring the temperature of the stove; it has two or three recumbent, ovate-oblong leaves, which are prettily latticed by veins crossing the longitudinal nerves: the flowers are produced in a sub-capitate umbel; they are funnel-shaped, gaping, of six segments, which are pure white in the centre, with a beautiful broad blue margin. There are several slight varieties, which differ principally in the shape and breadth of the segments of the flower, and in the shade of colour. They are not large growing plants, seldom exceeding a foot in height. They grow freely in equal parts of turfy loam, peat, and white sand.

When at rest, a state into which these, in common with other bulbous plants, require to be brought, they may be set away on a cool, dry shelf in the green-house or stove; if possible, this rest should be induced in the winter, so that the growth may be effected under the advantage of the light of summer. As soon as growth commences, they will require to be watered more or less freely, gradually increasing the supply until they reach their full vigour: they ought to be kept in a light place in the stove, away from the extreme heat, which sometimes is experienced at that part of the house where the influence of the artificial heating apparatus is most strongly felt; they delight, however, in a slight, mild, and genial bottom heat. When in flower, they may be removed to a warm position in a green-house, where they will last in flower much longer. All this time they require liberal watering. When the flowers fade, the leaves remain for a length of time, and water must therefore be given until these become mature, when it may be decreased until they are brought to a state of rest for the season.



DWARF STANDARD PEAR-TREES:

THEIR CULTIVATION AND MANAGEMENT.

A KITCHEN-GARDEN, properly so called,—that is to say, a space of ground allotted for the production of a constant supply of vegetables, whether it be of limited, or of almost unlimited extent,—ought not to be planted with fruit-trees designed to assume their natural tree-like form of growth. Without entering into the many reasons which may be advanced to support this position, it may be mentioned, that the shade of the trees is, for the most part, opposed to the production of good crops of healthy vegetables, while the roots, of course, abstract fertility from the soil; and, at the same time, the constant digging and trenching, and manuring of the soil absolutely required to secure good vegetable crops, is detrimental to the healthfulness, and, consequently, the fertility of the trees. The broad fact may be assumed, then, that fruit and vegetable crops should not be cultivated together on the same ground; and this fact is admitted by all good gardeners at the present day, though the amateur may not have had an opportunity of being made fully acquainted with this admission.

Fruit-trees, then, which are allowed to attain something like their natural size, and to grow, in a manner, but little restricted—in other words, what are known as standard fruit-trees,—should be planted by themselves in a space of ground devoted to the especial purpose. Such fruits as the Apple, the Pear, the Quince, the Medlar, the Cherry, the Plum, and some others, are now specially referred to. Standard trees of these kinds of fruit ought to be planted together in a separate department; and such an association of fruit-trees constitutes an orchard. With the management of an orchard we have now no concern.

There are cases, no doubt, where a portion of ground cannot conveniently be allotted as an orchard; and, in such cases as these, there is a means of cultivating a certain proportion of such fruits as may be required without interfering, in the slightest degree, with the vegetable crops. This is effected by various methods of training, by which the trees are kept dwarf, and of small diameter; and they are confined to a single row next the walks, leaving the greater part of the ground free and open for the vegetable crops. A garden planted in this way has always a very pretty and appropriate character, and a very great bulk of fruit, especially of the choicer kinds, is to be obtained by these means.

In those establishments where orchards can be formed, at least in those of modern date, the kitchen-garden is planted in a similar manner, with dwarf trees variously trained, consisting of all the finer varieties of pears, apples, &c., while the commoner and less valuable kinds are grown in the orchard.

The object of the present article is to direct attention to the planting and management of dwarf standard pear trees, cultivated in the manner, and for the purposes referred to above. It will be convenient to divide the subject into the heads of soil, planting, pruning, and training, offering also some incidental remarks on the propagation of plants for this special purpose.

SOIL.

THE proper selection and preparation of the soil are points of the utmost importance, being, in fact, the foundation either of success or failure in the produce of the trees. Lest this should be thought to be too sweeping a statement, it may be observed, that deep planting, either in rich or in badly-drained soil, will respectively cause rank and barren growth, or disease, such as canker, &c.; whilst shallow and elevated planting, in properly prepared soil, will be a means of causing moderate and healthy growth, and of inducing fertility.

The soil which has been found to be the most suitable to the growth of the Pear-tree, is one of a loamy nature; and of loamy soils, such as contain a considerable proportion of alumina, or clay, are preferable to those which abound too much in silica. The preponderance of the alumina must not, however, be to such an extent as to render the soil more than *moderately* retentive of moisture; for when such is the case, no plant, and especially a fruit-bearing tree, can be expected to thrive, and continue in a healthy and fruitful condition. On the other hand, the proportion of silica must not be too abundant, for this would be productive of the opposite extreme; the rain-water would pass downwards too rapidly, carrying with it, in its progress, not only its own fertilizing properties, but also much of the fertility of the soil; and the evaporation of moisture from the surface, under conditions favourable thereto, would speedily render the soil too dry for the purposes of vegetation. It will thus be evident that a soil of medium texture would secure all the advantages which a proper mechanical composition of the soil would produce; it should contain just enough silica (or flinty matter in a finely divided state) to prevent the stagnation of superfluous moisture, and just enough alumina (the chief constituent of clay) to prevent a very powerful evaporation. Abercrombie, one of our best old authors, recommended a dry, deep loam, when the trees are growing on a stock of their own species; but a moister soil, when a Quince stock is employed. This soil may be eighteen inches in depth. Gravel is a good subsoil, where the incumbent earth is suitable; clay is a bad subsoil, generally speaking, though it admits of great improvement and amelioration by draining and subsoiling. To prevent the trees from striking down into a subsoil of this nature, stones or slates should be placed beneath the plants, though a great deal may be gained by a good preparation of the surface soil, sufficient elevation in planting, and by giving the roots a proper direction in the first instance, at the time of planting: if these points are attended to, they will not be so likely to go wrong. M'Intosh agrees with Abercrombie in considering moderately shallow soils best suited for the Pear; on light soils, he observes the trees arrive sooner at a bearing state, but do not last so long; whilst on damp clay soils they are liable to become diseased, and, if too deep and rich, they revel in the production of luxuriant and useless wood, without bringing a fair proportion of fruit.

A loamy soil of medium texture, as it is called,—that is to say, a crumbly soil, of rather an unctuous character, is, therefore, that in which the Pear may be most successfully grown; and this should be well drained and pulverized, and if resting on an under stratum of a gravelly nature, so much the better. But though this may be regarded as the best soil that could be secured, yet almost any soil, with a proper and careful preparation, will support the Pear-tree in good health, and enable it to produce fair crops of fruit. When the preparation of the soil is spoken of, such a preparation as that afforded to the Peach and Nectarine is by no means intended nor required. The delicate and exotic Peach-tree requires all the art that can be brought into operation in the construction of proper borders for its culture; and sometimes, after all has been done, the end in view has not been accomplished. The Pear-tree, though it may be in some degree benefited by a thorough renovation of the soil, does not actually require such a preparation; its more hardy nature and constitution is sufficiently provided for when the main features of the natural soil are altered, either by the addition or subtraction of whatever may be necessary to adapt it to Pear culture.

Soils of a lighter and more sandy texture than those which are to be recommended for the cultivation of the Pear, are, as we have seen, unsuitable, from their allowing the fertilizing properties of the rain, and of manure, to pass away too readily, and from their favouring the abstraction of moisture from the soil to a too great extent by evaporation; in a word, they starve the plants. Such soils are to be improved by the addition of heavy loam, approaching to clay, in sufficient quantity, according to the degree of lightness or sandiness in the soil, to render it, to a certain extent, retentive of moisture. The light and heavy soils should be intermixed and blended together as perfectly as possible, in order that the full advantage may be experienced. Soils of this nature seldom require any artificial drainage, the natural texture and composition of the subsoil being such as to admit sufficiently freely the percolation of moisture. If the situation should happen to be a low, damp one, it ought, however, to be drained in the ordinary way.

On the other hand, heavy, close, and adhesive soils, approaching to clay, which, for the most part, rest on a subsoil of clay, require not only the melioration of the surface by the addition of silica, or sand, but require also the greatest care and attention in draining and subsoiling, in order to prevent the stagnation of moisture beneath the prepared surface. On such soils as these the recommendation, which will be hereafter given, to plant high, will be especially applicable; for it is under such circumstances that the roots become injured by deep planting, which is far less felt on light and porous soils. The addition of sand, or any substance containing a considerable portion of gritty matter, is for the purpose of its becoming intermixed with and disintegrating the aluminous particles, by which means the whole mass, in process of time, becomes friable and easily worked. This advantage, for the most part, is simply mechanical; but it is an advantage of great importance. Other substances, such as wood-ashes, charcoal-dust, or lumps of charcoal, brick-dust, or charred rubbish of any kind, or even burnt clay, would improve the texture of the soil very much; but as these are scarcely so permanent in their effects as the sand or grit, when it can be procured, it should be used first, and then any of the others may be added to complete the process of melioration. The processes of draining and subsoiling require to be carefully performed. With regard to drainage, the general system of drains, with which a garden ought ever to be furnished, will be sufficient. No garden ought to be formed, or, if formed, it should not be suffered to remain without a thorough system of drains, sufficiently numerous to carry off all superabundant moisture from the soil. If this is not done as a part of a general system, it ought, at least, to be done before fruit-trees are planted: the nature of the soil must regulate the kind of drain; in a clay soil, a depth of three or four feet will be most effective; in lighter soils it is not necessary to go so deep. Subsoiling, that is to say, trenching up the layer beneath the surface soil, must be done cautiously; if it be of a gravelly nature, it is less important that it should be disturbed at all; but if of clay, it should be broken up and loosened; *by no means, however, should it be brought to the surface;* and the object in breaking through it is principally to facilitate drainage. Almost all soils are *deep enough* beneath the surface for the growth of fruit-trees, so that whatever fresh soil is added should be made to raise the border above the general level, keeping all the good soil near the top, and allowing the crude subsoil still to remain beneath. In order to prevent the roots penetrating so readily into the lightened substratum, the bottom of the good soil should rest on a layer of coarse material, placed in pretty firmly, but yet so as to allow the downward passage of the water. Immediately beneath the plants, in the centre, paving tiles are sometimes used, to prevent the roots striking downwards; and some hard material in this situation is, no doubt, beneficial for the purpose.

The application or use of ordinary manures, to any extent at least, is hardly justifiable under the circumstances of the case. The soil would either naturally or artificially be rendered of such a texture and composition as to be made suitable for the growth of the Pear; and, in most cases, this would involve the application of a certain amount of fresh or maiden soil. Even if the texture of the soil required no application of this kind, the use of such materials as charred earth, refuse, or wood, or wood-ashes, would impart fertility enough to secure a very healthy and satisfactory growth. Under these circumstances the trees would grow with vigour, but not luxuriantly; and whilst they possessed strength of constitution, they would avoid the grossness or *apparent* strength, which is, in effect, *real* weakness. The benefit and uses of manures are to supply certain properties and matters which have been extracted from the soil by the plants during their growth; and also by the chemical action of their component parts, to decompose and render soluble certain ingredients in the soil, which would otherwise be unavailable to the roots of the plants. If such be the action and use of manures, and the design in applying them, it is evident that fresh soils, or those which have not previously been planted with Pear-trees, such as the prepared soil already referred to would be circumstanced, ought not to have any addition of manure, while the elements of the growth of the trees remained unexhausted in it. The application of manure at that period would only tend to induce a vigorous and luxuriant growth; a quality which, so long as healthiness of constitution is secured, is of all others the most to be avoided in plants which are required to produce fruit with regularity. It is the rash and improper use of powerful manures, at the *formation* of fruit-tree borders, when the trees are, of course, young, and naturally vigorous, which is productive of a great portion of the diseases to which fruit-trees are subject; at least, this may be regarded as the predisposing cause. The proper time to apply manures at all, is when the inherent fertilizing properties of the soil become exhausted, and then no more than is sufficient to make good the deficiency ought to be applied at any one time, or an effect the same as that of an undue application, in the first instance, will ensue. The gradual, yet gentle action, which, according to this view, would be required from the manure when applied, seems to suggest the special applicability of liquid manure for a purpose of this kind, as it can be applied just when necessary, without involving the necessity of being present in the soil at any period when not required. The objection to solid manure of the ordinary kind is, that it either requires frequent application in small quantities, and then the roots often get much disturbed; or, if a larger quantity is given at one time to avoid this evil, the greater evil of encouraging luxuriance will be likely to follow. The best mode of applying solid manure, for benefiting the trees, is to lay it as a mulching on the surface of the ground, just, perhaps, scratching up an inch or two of the soil, to lay over it, to hide its littery appearance, and to prevent, in some degree, the loss of any of its fertilizing properties by evaporation. Such manures as soot and broken bones would be of benefit to the plants; the latter might be mixed with the soil at planting-time, as its effect is slowly given off, and not so likely to induce luxuriance at the first as some others. Soot must be used but sparingly, sprinkling a little on the surface, and just mixing it among the surface-soil with the points of a dung-fork: it is very powerful in its action. Soot is also an excellent ingredient in forming liquid manure. Wood-ashes or charcoal may be employed, and mixed pretty freely with the soil; they form some of the most suitable manuring substances that can be applied.

PLANTING.

There is no period like the early part of the autumn for planting hardy trees of all descriptions, and, therefore, fruit-trees among the number. The additional soil required in the preparation of the border is most conveniently collected together in the summer season, because it is then most free from moisture, and therefore will better admit of removal without becoming soddened, or in any way consolidated; the removal of soils in the winter, when they are usually charged with moisture, is far less desirable. The next best time to the summer, is when a hard frost prevails; for then it can be moved pretty well without consolidation, and the action of frost, as well as of the sun, is favourable to its pulverization. When brought together, it should be placed in a compact heap, and two or three times, during dry weather, turned over and thoroughly commingled. If the soil is provided in the summer, as it best may be, then the most proper time for preparing the border is early in the autumn, before the seasonal rains, which, toward the end of autumn, usually saturate the soil; and this being done, the plants can be put in without delay.

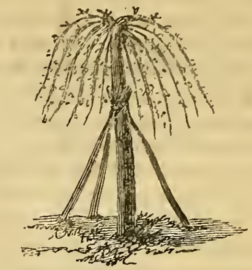
The preparation of the border for planting consists in first attending to the drainage; then placing a layer of coarse rubble of any kind, and finally adding the new soil, and completely intermixing it among whatever proportion of the old soil may be retained. Neither while this is going on, nor yet subsequently, *ought* the prepared soil to be trodden on; for whatever partial compression it may receive, by this or any other means, will prevent it from settling in an even and regular manner, to the detriment of the roots of the planted trees. Another point that ought to be attended to is this:—the surface of the soil ought to be a foot, at least, above the general level; in fact, the plants may be planted almost on the surface, and whatever covering the roots may require may be given in the appearance of a slight mound. In making up and levelling the ground, therefore, its settling must be allowed for, so that, when this takes place, the roots may not subside below the level more than is desirable; for any soil added then to make the surface look level or pleasing to the eye, would go so far as its quantity, whatever that might be, in burying the roots beneath an undue amount of soil; contrary to this, the roots ought to be encouraged and maintained near to the surface of the ground.

This leads to the consideration of the proper position of the plants in the soil, which must be determined by the local circumstances. If the soil is of a wet, cold nature, they ought to be planted nearly or quite on the original surface, and have their roots covered, as already noticed; but if the situation is such as to preclude the fear of injury from moisture, the usual plan, that of taking out a pit in the soil, for inserting the plant into, may be adopted. In either case,, the bottom on which the roots are placed must be so far consolidated, as to prevent any of them from taking a downward direction; but it must also be arranged so as not to hold water; the best plan is to form the hard mass beneath highest in the centre, and, directly under where the stem is to be placed, allowing it to slope away slightly all round; no water can then be collected about the roots.

In trenching the ground, or otherwise mixing and preparing it for the plants, the utmost precision, almost amounting to mathematical exactitude, ought to be observed as regards its consolidation; it should be laid together lightly and evenly, and no parts should be consolidated by treading or trampling upon it when it is in course of preparation, nor at any subsequent period. One of the reasons why treading on the soil should be, as much as possible, avoided, is, that it causes the whole mass of earth to subside irregularly, and when the roots of the plants are properly laid out, and intermixed with this mass of earth, the irregular settling of it is injurious to the roots, causing them to be broken, or diverting them from the horizontal tendency which should be given to them at planting. Another reason is, that the particles of soil become too much compressed; and especially if it is at all wet, they cohere to such an extent as to hinder the ingress of the atmosphere among them: this, in a general way, ought to be avoided, but most especially upon clay soils; upon very light soils treading or consolidation is less hurtful, and, in some cases, if done evenly and regularly, it is actually beneficial. In making up the border, too, it is particularly desirable that it should be formed sufficiently high above the intended level, to allow for its settling down; for if this precaution be not taken, the border, instead of being elevated above the surrounding level, as intended, may ultimately become depressed beneath it; and any addition of soil afterwards to make good the deficiency is to be avoided, as having the effect of covering the roots to too great a depth, and, to a certain extent, assisting to exclude from them the action of the atmosphere. Two feet of soil, if light, may be expected to sink nearly or quite six inches; or, if more solid and compact, it will subside proportionately. As a general rule, the surface of the bed where the trees are inserted ought to be *at least* a foot above the general level, gradually passing off into the ordinary slope of the ground; and the principal roots ought to be placed horizontally, at from six to nine inches below the surface.

The process of transplantation involves many considerations. It is necessary to remember that the roots of plants are the organs through whose agency they derive much of their nourishment from the soil; the extreme points of the roots, or spongioles, acting as mouths, and imbibing the sustenance necessary to maintain their vitality. Plants having vital powers adapted to their peculiar nature, these powers require to be kept in full exercise, if the greatest amount of success is to be attained; in order to this, they must be supplied with as much food as they are capable of consuming. It is therefore evident, that in transplanting successfully, the fibrous roots must, as much as possible, be preserved from injury; and, when placed in their new position, the elements of growth must be within their reach. Two of the most powerful agents in inducing growth are heat and moisture combined; but the pulverization of the soil is also of great importance. For some distance around the plants, the soil should, at least, be equally stirred and loosened; and none but fine earth should be put in immediate contact with the roots.

Supposing the soil prepared as already noticed, the next operation is to prepare a pit for each plant. If the situation is dry, and the soil light, this may be done, as already directed, by taking out enough soil to bring the main roots about six inches below the surface, from whence they are to be led out, in all directions, in a slightly-inclined plane; but the space when taken out should be large enough for all the roots to be laid out quite straight, without being crumpled, or crossed, or bent in any way: the roots, in fact, ought to be laid as regularly and evenly as the branches of a tree carefully trained against a wall, according to the fan-fashion. If the situation is wet, and the soil heavy, the surface must be prepared in a similar manner, and the roots laid out, and then covered over by an addition of soil above the surface; so only can the plants be guarded from the injurious effect of too much moisture in the soil. When the roots are laid out, they should be gently covered with fine soil, shaking it regularly and evenly among them; a portion of the soil may then be covered over them, and then, in most cases, it is desirable to give them a good soaking of water, in order to settle the earth, and as soon as this has soaked in, the remainder of the soil is to be added, and left without consolidation, quite even on the surface. The plant, if furnished with any extent of branches, should be staked immediately, to prevent its being blown about by the wind, than which nothing is more hurtful to newly-planted trees. One of the firmest ways of tieing trees is by means of three stakes placed at equal distances around the plant, the base sloping outward, and the upper end of each meeting together at two or three feet up the stem: the advantage of this plan is, that the plant is able to meet the force of the wind blowing from any point; while a single upright stake is acted on alike on all sides, and has but little power of resistance.



Theplants should be selected from a respectable nurseryman's stock, and then no fear need be entertained but that they will be "lifted" (as the operation of taking them up is technically termed) in a proper manner, without serious injury to the roots. If the produce of the trees is the object, it is always better and cheaper to pay a somewhat higher price for the article, and have this operation carefully performed, than to be tempted by any semblance of cheapness to become possessed of plants which have been torn up by some careless operator. Were it possible to preserve every root and minute fibre in the removal of a tree, it would be desirable to do so, and success would be proportionately more certain; but as this is impracticable, the least possible amount of injury should be inflicted—bearing in mind that it is not by the coarse roots that the absorption of food is carried on, but by the youngest parts, and especially by the spongioles. Under any circumstances, a portion of the roots will be mutilated, and, in this case, the bruised parts should be removed, by cutting them with a sharp knife, at rather an obtuse angle. This aids the formation of new roots, while the bruised parts, if suffered to remain, would probably decay, and communicate injury to the adjacent parts.

The most successful time for performing the operation, is in the early part of the autumnal months, as soon after the leaves have become matured as possible. Trees and shrubs have been, and may be, with care, removed at any season of the year; but then it is by an accumulation of favourable circumstances, or else by great care and attention, that success is secured. The early part of the autumn seems, however, to be clearly pointed out as the most fitting period; for then plants of this nature are as much at rest as at any period,—and the rest time is that in which plants can most safely be removed. In fact, at this period plants are more perfectly at rest than at any other period, in consequence of their excitability being then exhausted by a season of growth; and hence at this period they may be most safely removed. It was previously remarked that heat and moisture were powerful agents in forwarding the growth of plants. As regards heat, autumn-planted trees have the advantage of the earth being warmed by the summer's sun; and this warmth is very grateful to the roots, and induces them to grow and repair their injuries before winter arrives; but when planted in spring, the earth is chilled, and the roots lie torpid, while the warmth of the air excites the branches, and the plant struggles hard to maintain its vitality. Again, as regards moisture, in the autumn the air is mostly charged with moisture, and, consequently, so much is not abstracted from the plants; whilst in spring the parching wind, and increasing power of the sun, together dry up the moisture of the plant very rapidly indeed. In opposition to autumn planting, it is sometimes urged that the plants in damp soils suffer from the excess of moisture; but this is no argument; for soils liable to any excess of this kind are not in a fit state to be planted at all until they are drained, and the excess of moisture carried off.

TRAINING AND PRUNING.

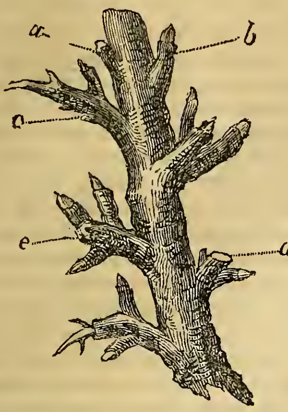
We have not now to do with trees which are most usually technically called *trained;* that is, such as have their branches spread out against a wall, or fence, or even those which are trained flatwise to stakes, which latter is better known as "espalier training." All these are termed "trained" according to the technical sense of the word in gardening language. Our object is with what are called dwarf standard trees; or, in other words, trees having a single stem, and whose branches are not allowed to extend more than two or three feet on each side of that stem, nor to rise more than seven or eight feet from the ground.

This object is sometimes obtained by pruning and placing the branches in a manner similar to that in which gooseberry and currant bushes are managed; that is, to keep all except the main branches "spurred in," or cut nearly close back, while the centre of the tree is left open and free, the branches being kept, as nearly as possible, to form the circumference of the tree. With the very weakest growing varieties this plan sometimes answers; but the trees are liable to outgrow it, and then no advantage is gained. According to this plan, the principal shoots are cut back when they have reached the intended full size of the tree.

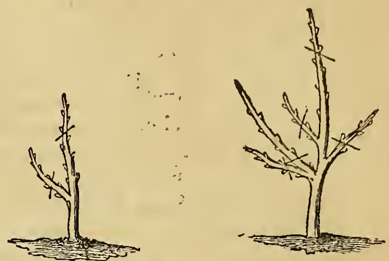
The two principal methods which are here recommended as having the greatest advantages, are what are termed *en quenouille,* or distaff training, and the *umbrella,* or pendulous training.

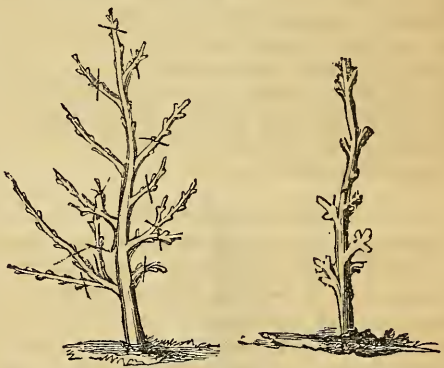
It is desirable here to state, that trees intended for this purpose should be grafted on the Quince stock, instead of what is termed the free stock: the latter are stocks raised from the seeds or pips of Pear-trees, and trees grafted on them grow much more vigorously than when on Quince stocks, and are consequently less suitable for being kept in a dwarf state. Quince stocks have been condemned, as tending to render some of the varieties gritty and of bad flavour; but this is not found to be the case when the trees are properly planted in situations prepared and adapted to them; consequently the evil is not to be attributed to the use of these stocks. One advantage is gained, which more than counterbalances any slight disadvantage that may attend their use, and that is, that they aid the dwarfing process, by growing less freely than Pear stocks, and, consequently, tending to prevent luxuriance in the branches. If these are well furnished with fibrous roots, when taken from the nursery to be permanently planted, (too often they are not furnished so well as might be desired,) there is little fear of their making satisfactory progress afterwards; and if what has been said of preparing the soil, and planting the trees, is attended to, they will maintain their health and moderate vigour for a long time, and continue to yield good crops of well-perfected fruit. Quince stocks are, however, better adapted for clay soils than for gravelly ones. Mr. Seton, in the "*Transactions of the Horticultural Society of London,*" remarks, that he has found a stiff clayey or loamy soil generally unfavourable to Pear-trees; but that Quinces, and Pears grafted on Quince stocks, thrive exceedingly in it. Soils of this nature being prevalent in many parts of this country, the means are thus afforded, by the use of Quince stocks, to persons in such situations, of cultivating to advantage many varieties of Pears, which would never bear fruit in sufficient quantities if grafted on their own species. On the other hand, he has noticed, that, in a light gravelly soil, with a gravelly or sandy bottom, Pear-trees succeed better than Quinces, and in such situations, Pear stocks will, of course, be preferable.

Before entering on a description of the modes of training about to be spoken of, it may be well to notice briefly the manner in which the branches of a Pear-tree are produced. A one-year-old shoot, after the fall of the leaf, is simply furnished with small buds similar to that at (*a*); some of these buds generally produce shoots the following season, just like that which bears them; others do not elongate in the form of shoots, but put out a leaf or two, and extend a little from the main branch, bearing, by the end of the season, a plump, roundish bud at the extremity, as at (*b*); this is a blossom bud, and by the end of the next year it has borne fruit, and is something like what is shown at (*c*); the upper part is generally removed in gathering the fruit, leaving it something like (*d*); and after the lapse of a season, this has become formed into a spur, as at (*e*), with two, three, or more blossom buds, which bear fruit the next year. It will be obvious that if these are left to themselves, they will, every season, become larger, and will extend by degrees further from the main branch; but it is some years before this becomes inconvenient. If the branches are healthy, however, and it is preferred to operate on them, rather than to remove them, and train young ones in their place, these spurs may be cut back to near the main branch, when the small incipient buds just visible at the base of each spur, in the sketch, will be developed, and will go through the same regular course as the primary buds. If a few of the largest of these spurs are annually removed from the branch, it may always be kept with a sufficient number to bear a good crop of fruit, while the annual removal of a few of the most advanced will keep the branch in order, as long as it may be thought fit to retain it, or it may continue in health. The principal branches are to be renovated on the same principle; one or two being removed annually, or when it may be found to be necessary, and a healthy young shoot brought into its place. Thus it is that trees are kept in perpetual vigour, and continually in a state to produce crops of fruit. This brief explanation of the nature of the growth and bearing of the Pear-tree will render what follows the more intelligible to those who know little of these matters.

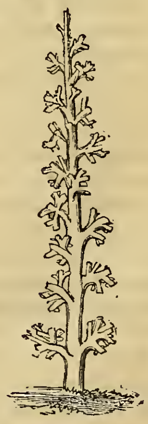


PYRAMIDAL TRAINING.—This mode is a good deal practised on the Continent, but not so much in this country. It consists in training the trees, each to one upright perpendicular stem, which is usually in this country allowed to rise eight or ten feet in height, but on the Continent frequently as much or more than twenty feet. The side branches which issue from this main stem are kept spurred in, so that, after the pruning season, a tree thus trained should look like an upright pole furnished throughout with spurs, the lower ones being, of course, the oldest, and also the longest and largest. The mode of bringing a young tree into this form will be understood by the subjoined figures.

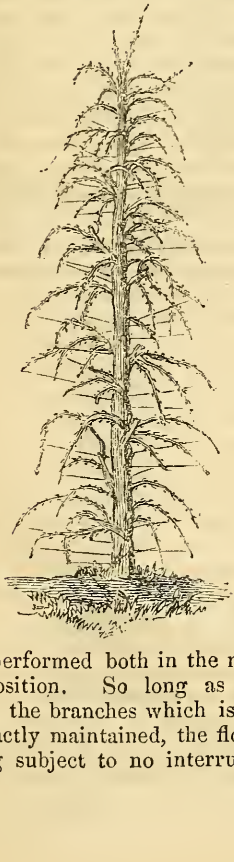




It is a variety of this mode of training, which is called *en quenouille*, or the distaff training:



in this, the side shoots are allowed to grow eighteen inches or two feet from the stem, being longest at the base of the tree, and gradually shortening upwards ; these shoots are brought down in a pendent manner, by bending the point downwards and tieing it with a string to the stem, till its growth is finished. As more of these side branches than would be required would be formed annually, they must be thinned by disbudding to about nine or twelve inches apart, varying the distance according to the slender or vigorous growth of the tree, or whether it produces large or small foliage : the object, of course, is, to thin them enough to keep the branches from becoming crowded. The tieing down is done when the shoots are fully grown, about the end of July; and in the course of the winter the strings are removed, and the branches are found to be set in a curved manner. If any of them grow too vigorously in the summer, they are to be tied down again ; the object of tieing being to check their vigour, and to cause the shoot to expand itself in producing flower-buds. Lindley thus explains the *rationale* of the practice :—"The effect of turning the branches of a tree from their natural position to a pendulous or horizontal one, is to impede both the ascent and descent of the fluids in a gradual but certain manner. The tissue of which branches are composed are certainly permeable to fluids in every direction, and there can be no doubt that the vital action of the vessels of a plant is performed both in the natural and inverted position. So long as that erect direction of the branches which is natural to them is exactly maintained, the flow of their fluids being subject to no interruption, will take place in the fleetest manner possible ; but the moment this natural direction is deviated from, the vessels become more or less compressed, their action is impeded, and finally, if the inversion is perfect, it becomes so slow, that an accumulation of the proper juices necessarily takes place through every part of the system," resulting in the formation and development of fruit buds.



Neither of these methods can be regarded as being perfect ; the former is most suitable for weak and slender growing varieties, for the stronger ones will not submit to so much restraint. The latter has the disadvantage of the uppermost branches continually growing and hanging over, and shading those which are beneath them, though, as the points of the branches would be the most productive parts, the fruit would only be shaded to a certain extent. Neither is there space afforded on the trees for an amount of produce equal to what will, in most cases, be obtained from the method now to be considered, and which is represented by the cut at the head of this paper.

Umbrella Training.—The pendulous, or umbrella training seems to present the greatest advantages of any method which has been devised for disposing of the branches of dwarf standard Pear-trees. The most perfect form of pendulous training is something like the following :—From the top of a straight stem, six, seven, or eight feet high, (trees of one particular height should be planted together, for the sake of appearance,) a series of seven or eight strong healthy shoots, as nearly equal as possible, should be provided ; these may be obtained by pruning back the three or four shoots produced the first year from the top of the stock, and retaining two or three shoots from each the following year ; of course, the most evenly placed shoots as to distance should be selected. When the requisite number of shoots are secured, the next thing is to train them into the figure of the future tree ; first outwards, in each direction, and then downwards, so as to form a figure resembling an umbrella, or, by a little modification of form and stretch of imagination, a balloon. The manner in which the tree may be first moulded into form, may be something like the following :—The stem of the tree should be firmly fixed upright ; about level with the point where the branches issue from the top of the stem, a circular hoop of wood, or stout iron wire, about five or six feet in diameter, should be fixed, by means of tall stakes; to this hoop the branches are to be trained, radiating outwards from the centre ; about three feet lower down, another hoop should be fixed seven or eight feet in diameter, towards which, as they extend, the branches are to be led in straight lines; near the ground another hoop, ten feet in diameter, should be fixed more permanently than the others, and to this the points of the branches are to be fastened down by strings. The plant will thus be surrounded by three hoops at different altitudes, and gradually increasing in size downwards; the branches are to be led directly from the central stem to the uppermost hoop, and from this downwards to the other two in direct lines. The first series of branches will need to be cut back, with a view of producing two leading shoots, or more, in place of one; this, however, will depend entirely on the strength of the variety, and the actual diameter given to the tree. It will be quite sufficient to state that enough branches must be secured to train in at about one foot apart. The first year after planting trees furnished with eight or ten shoots each, which will be at least three years from the graft, these shoots should be cut back to about two-thirds of their length, so that another season will elapse before they extend outwards to the upper hoop; they may be fixed horizontally by temporarily tieing a straight stick to the hoop and the stem of the tree, for each shoot; and this temporary support may be removed when no longer required. After pruning the trees for the purpose of securing a sufficient number of branches, of which nearly the full number should be provided by the time the shoots reach the upper hoop, the pruning and management of the individual branches will be just similar to that spoken of under the head of pyramidal training, viz. to cut back the leading shoots each year, to secure other strong leading shoots, and then to spur in closely all the side shoots that are produced; the object is to cover each of these pendent branches with fruit-bearing spurs, and, except on the top of the tree, there is little difficulty in producing them. The points of the pendent shoots may either be led downwards by fixing a temporary stick from hoop to hoop, to fasten each to, or a piece of string may be tied (not quite tight) near the point of the shoot and fastened below, thus pulling the shoot into its proper position; either way will do. When the skeleton of the tree is formed, all except the lower hoop may be removed. It is the general practice to do much of this even without hoops at all, or, if they are used, they are altogether removed; but, for the sake of securing the symmetry of the tree, the lower hoop might be permanently retained, and the points of the shoots fastened to it; this would keep them more regularly placed than they would remain were the hoops entirely removed. When the hoops are dispensed with, the branches are kept from springing upwards into their natural position, by circumscribing the whole by a band of packthread, which is passed round each of the shoots, and thus keeps them all tolerably steady; this plan *will do*, of course, as well as any other, but the orderly appearance secured by retaining the hoop is to be preferred.

The side shoots which are produced on these principal branches, are easily converted into fruit-bearing spurs; and this may all be done by summer pruning better than by pruning in the winter; the buds, by means of summer pruning, are better organized, and a season is often gained; besides, the work is much more easily performed. The process is thus:—As soon in the spring as the shoots have extended two or three inches, or so far as to develop three or four leaves, pinch off the top of the shoot beyond the fourth leaf, using the thumb-nail for the operation; thus all the force that would have been expended in the formation of the shoots becomes concentrated in the three or four buds which are formed in the axils of the leaves which are left. By chance one of these buds may afterwards break forth, and produce a shoot; but if such is the case, it should be treated in a similar way, and then, at the winter pruning, if the whole is found (as it probably will be) to be inconveniently long, the spur can be cut back to the bud next behind where the shoot started from.

The greatest difficulty is with the crown or upper part of the tree; in this part the force of the ascending sap will be continually inducing the production of vigorous shoots. Under these circumstances but little fruit is obtained from this particular part of the tree; nor is there any very ready means of checking the production of this useless wood; if the tree is in vigour, the sap will have vent somewhere, and it is in this upward direction that its tendency is the strongest. There is one advantage in having vigorous shoots produced at this part of the tree, for they furnish a supply from which to choose young shoots, to replace any of the older branches which may become diseased, or require removal. Much may be done towards lessening the drain they cause on the sap, by carefully attending to stopping them back in the early part of the season, as well as after Midsummer, when the second growth takes place; and there is no doubt but that, with assiduity, much of this part of the trees might be reclaimed, and rendered productive. This would not be the case, however, unless the trees were quite as they should be at the roots; any undue vigour at the root would be sure to be developed in the branches, and thus the object would be defeated by the production of quantities of wood buds, instead of fruit buds. It may appear strange to speak of undue vigour in the trees, but it must be borne in mind that vigorous growth, beyond a certain point, is directly opposed to the production of fruit, and therefore not to be desired in fruit-bearing trees.

When the tree is once formed, the subsequent management and pruning is very simple. All the wood shoots that are produced are to be cut back nearly close, for the purpose of forming them into bearing spurs: this *may* be done either by summer pruning, or winter pruning, but the former is certainly preferable, as tending to husband the energies of the trees, and to exercise them profitably. If summer pruning is practised, it consists in pinching off the points of the young shoot when two or three inches long, subsequently following up this practice throughout the season, as already alluded to. If winter pruning is preferred, the shoot should be cut back to the small incipient eyes, which may be observed within about an inch of the base: these incipient buds may, for the most part, be expected to develop themselves as fruit spurs, if the tree is not growing too vigorously.

Root pruning is sometimes strongly recommended for these small fruit trees. There can be no doubt that, if skilfully performed, this, as well as any other means of checking luxuriance, will cause a corresponding degree of fruitfulness; but as it involves a good deal of trouble and labour, and practical knowledge, it cannot be generally recommended. Besides, too, it must be admitted that it is an unnatural process. We would rather secure a fruitful development of the plant by attention to the soil, and the manner of planting the trees, and managing the branches.

To sum up in few words what may be said of root-pruning; if a tree is growing moderately, and producing fair average crops of fruit, it requires no interference with its roots; but if, on the other hand, a tree is growing very vigorously, to the manifest injury of its fruitfulness, then to have it taken up and replanted, shortening back some of the strongest of the roots at the same time, is the most likely means that can be adopted to bring it to a state of fruitfulness.

The renovation of old worn-out trees of this character is a matter of considerable interest, and also of practical utility; it is, moreover, a thing which can be accomplished. When planted for any length of time, there is a propensity in the roots of trees to strike downwards, and this is often alone sufficient to produce all the evil that may be complained of; for when the roots have penetrated the raw, cold, crude subsoil, the cankering and decay of the branches, and the cracking of the fruit, are results that may be anticipated. In the process of renovation, the first thing is to take up the trees, and see that the soil is altered, prepared, and drained, in accordance with the foregoing instructions; then the roots are to be well cut in; all the perpendicular ones quite removed, and the strongest of the horizontal ones severely shortened back, leaving the fibrous parts near the stem untouched. The heads of the trees are also to be cut quite back, leaving the main branches only a foot or so in length from the principal stem; the plants, which then look like bare stumps, are next to be planted, taking care to keep the base of the stem well up above the general level, and to have the roots laid out carefully in a horizontal direction. The stems should be very well supported against winds by the process of staking already noticed. All this should be done in autumn; and in the following spring, if the varieties are not approved of, more choice or favourite kinds may be grafted on the old branches, and thus both the trees and the collection of varieties may be renovated together. During the winter, the ground about the roots should be covered with a thin mulching of half-rotten tree-leaves, or long littery dung from the yard or stable, in order to keep off the frost, and serve as a protection to the roots which are near to the surface. Care must be taken that the young shoots, which break forth in abundance, are not left too thick, so as to crowd and injure each other; they should be thinned out as soon as their relative strength can be determined, reserving a good leading shoot to each, and treating the others for the production of spurs. The same must be done if grafting is resorted to, though, in this latter case, it will generally be found to be desirable to remove entirely all the shoots put forth by the stock, unless indeed more than one variety is intended to be grown on the tree.

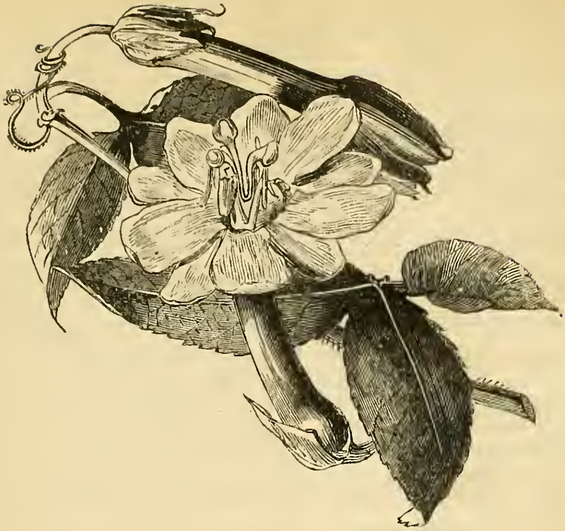
The principal features of management are—to plant on well-drained and well-prepared ground, not too rich; to plant high, and early in autumn; to employ healthy, well-rooted plants; to lay the roots out horizontally; to prune in summer; and to mulch the roots during winter, and in dry weather.

CHOICE OF VARIETIES.

The following Selected and Descriptive List contains most of the best sorts of Pears which are suitable for dwarf standards. The descriptive particulars represent about the average state under the respective heads; but all are liable to vary, more or less, in the season: thus, a dry, warm summer will cause the fruit to ripen earlier, generally improve the flavour, heighten the colour, and often diminish the size, while it will frequently happen that the fruit will keep better. Other particulars must be allowed for. A small selection of the very best kinds, to keep a succession, are marked with an asterisk.

SELECTED AND DESCRIPTIVE LIST.

Name.	Season.	Flavour and Texture.	Colour.	Form and Size.	Habit, &c.
DESSERT PEARS.					
Citron des Carmes* (*Madeleine*)	July	tender & juicy.	yellowish green	obovate; med.	small tree; good bearer.
Green Chisel (*Sugar*)	August	juicy; sugary	green	round; small.	
Jargonelle* (*Grosse Cuisse Madame*)	August	rich and juicy	yellow & brown	pyriform; large	branches drooping.
Summer Rose (*Epine Rose*)	August	juicy	russet red	oblate; large.	
Bon Chrétien, Williams's	Aug. & Sep.	buttery	greenish yellow & red	obt.; pyr.; large	hardy; good bearer; vigorous.
Ambrosia (*Early Beurré*)	September	buttery; rich.	green & yellow	round obo.; med.	does not keep; vigorous.
Dunmore*	September	buttery; rich.	gr. br. & russet	obovate; large.	good bearer.
Bergamot, Autumn*	October.	tender; rich	gr. br. & russet	round; small	ripens well.
Beurré, Brown (*Golden Beurré*)	October	rich & melting	brown	obovate; large	tree tender; good bearer.
Beurré de Capiaumont	October	tender and rich	brown and red.	obovate; med.	tree very hardy; bears well.
Louis Bonne (of Jersey)	October	buttery; rich.	greenish br. & red	pyriform; large	succeeds well; good bearer.
Seckel (*Sycle*)	October	buttery; very sugary.	brown & red.	obovate; small	good bearer; has a peculiar honey-like flavour.
Swan's Egg	Oct. & Nov.	rich; juicy	green & brown	obovate; med.	tree hardy; good bearer; upright growth
Bergamot, Gansel's	Oct. & Nov.	excellent; high flavour	brown	flat obov.; med.	
Aston Town	Oct. & Nov.	buttery; excellent	yell. gr. and br.	roundish; small	abundant bearer.
Marie Louise*	Oct. & Nov.	melting; delicious	brown & yellow	oblong; large.	tree hardy; bears well.
Doyenne Gris (*Grey Doyenne*)	Oct. & Nov.	buttery; rich; aromatic	russet red	obovate; med.	tree hardy; abundant bearer.
Duchesse d'Angoulême	Oct. & Nov.	melting & juicy	yellow & brown	ir. obl.; very lar.	good bearer; hardy.
Beurré Diel* (*Grosse Dillen*)	Oct. & Nov.	buttery; rich.	yellow & brown	obtuse pyr.; lar.	hardy, and great bearer.
Delices d'Hardenpont	November	rich; perfumed	brown & yellow	obt. pyr.; med.	does well as a standard.
Crassane, Althorp	November	buttery	green & brown	round obo. med.	good bearer.
Napoleon*	Nov. & Dec.	very juicy; rich	pale green	obt. pyr.; large	good bearer.
Incomparable, Hacon's	Nov to Jan.	buttery; excellent	brown & green	roundish; large	hardy; great bearer.
Glout-Morceau*	Nov. to Jan.	buttery; exceedingly rich	pale green	obt. ellip.; large	hardy; good bearer.
Beurré d'Aremberg*	Dec. & Jan.	buttery; excel.	pale gr. & br.	obovate; large	bears well as a standard.
Nelis d'Hiver (*Winter Nelis*)	Dec. & Jan.	buttery; excel.	yellow & brown	obovate; med.	
Chaumontel (*Beurré d'Hiver*)	Dec. to Mar.	melting & sugary	yellow & brown	oblong; large.	good bearer; very hardy.
Ne plus Meuris*	Dec. to Mar.	rich; melting	brown & russet	roundish; med.	one of the best late pears.
Monarch, Knight's	January.	melting; rich	yellow & brown	obovate; med.	hardy; and good bearer.
Broom Park	January.	rich	yellow & russet	roundish; med.	
Crassane, Winter	January.	buttery; rich	gr. yell. & br.	turbinate; large	hardy; and abundant bearer.
Beurré Easter* (*Bergamotte de la Pentecôte*)	Jan. to Mar.	buttery; rich	green & brown	obovate; large	hardy; and good bearer; an excellent late sort.
Beurré Rance* (*Beurré de Ranz*)	Mar. to May	melting, juicy, & rich	brown & green	obt. pyrif.; med.	the best late pear; hardy; bears well.
KITCHEN PEARS.					
St. Lezin	Sept. & Oct.	crisp	pale yell. & br.	pyriform; large	handsome fruit; good bearer.
Bezi d'Heri	Oct. to Dec.	crisp	greenish yellow	roundish; med.	abundant bearer.
Catillac (*Pound Pear*)	Dec. to Apr.	crisp	yellow and red	broad; turbinate; ver. lar.	good bearer; fruit large and heavy.
Uvedale's St. Germain (*Uvedale's Warden*)	Jan. to Apr.	crisp	green & brown	pyr.; very large	has been grown to 3 lbs. weight.



TACSONIA MOLLISSIMA.

(Humboldt, &c.)

DOWNY-LEAVED TACSONIA.

The Tacsonias are plants nearly allied to the Passion-flowers, from which they may be popularly distinguished by the long tube of the flower. Tacsonia pinnatistipula, first raised and flowered by Mrs. Marryat, of Wimbledon House, is now pretty well known, and admired on account of its fine pale pink blossoms. At one of the meetings of the Horticultural Society during the present autumn, we had an opportunity of seeing both that and the present plant together, thus affording a means of contrasting the two, and estimating the comparative merits of the more recently introduced species, more accurately than it would have been easy otherwise to have done. The blooms of T. mollissima are of a much deeper colour than those of T. pinnatistipula, the latter being a very delicate blush-pink, and the former a deep rose-pink, but with rather smaller flowers. On the whole, the new one may be expected to prove the handsomer of the two.

It is a climbing shrub, growing to a considerable length, with leaves divided deeply into three, ovate-lanceolate lobes or segments; they are serrated, and together with the stems and leaf stalks, and flower stalks, are downy. The flowers are produced singly in the axils of the leaves, and consist of a long green tube, and five calycine, and five petaline segments, together forming ten nearly equal divisions, of a lively rose colour. The plant appears to produce blossoms throughout the latter end of summer and the autumn.

The present subject was found by Humboldt about Santa Fé de Bogotá, and by Mr. W. Lobb, in woods near Quito. From seeds sent by Mr. Lobb, to Messrs. Veitch of Exeter, a supply of plants has been raised. It was also sent to the Horticultural Society, by Mr. Hartweg, and has already been distributed by the Society. Like its congener, it requires only a cool green-house, and is therefore peculiarly adapted for planting in a green-house conservatory. It is true it is indigenous in the tropics of New Granada, but then it grows at a height of nine to ten thousand feet above the level of the sea, and it is therefore evident that a temperate climate will suit it best. This has, in fact, been proved by Messrs. Veitch, who thus speak of its culture :—“We have cultivated it in the stove, but there the flowers invariably dropped off before they expanded. In a cool green-house it blooms freely ; and from what Mr. Lobb has said respecting it, and from our own experience, we are inclined to think it might survive our winter here, (Devonshire,) on a sheltered wall, and we shall try the experiment. As a conservatory climber it is eminently beautiful, and is best cultivated in a mixture of loam and peat with decayed leaves, and a little sharp sand.” Any moderately rich, light loamy soil would be suitable for it; and if grown in a pot it must be allowed plenty of room, as the production of flowers will be scanty; in fact, it is scarcely a fit plant for cultivating to bloom in pots, but requires a more free and unrestricted extension both of the roots and branches.

It is for such plants as these Tacsonias, which are known to be of a sub-hardy character, that the protective walls, known as conservative walls, now becoming so necessary a feature in a garden, are especially appropriate. In such a situation there is no doubt these plants would grow to the utmost perfection, and produce a succession of flowers from July or August until the autumnal frosts checked their further development.

HEATING CONSERVATORIES ON A SMALL SCALE.

Conservatories only require heat enough to prevent damp and frost from affecting the plants inside of them, and where the capacity of heating is too great, there is vast difficulty in applying the exact quantity of warmth required; for it is quite clear that too much heat will be injurious, and to some subjects almost as much so as frost. It is far better to adapt the quantity of heat that can be applied to the wants of the building, and the plants in it, than it is to have the means of excess under any circumstances. For this reason, hot water apparatus has been found to require much less care than flues, and, the quantity of iron pipe being adapted to the space, all chance of giving too much heat ceases; but there may be such a thing as keeping up a heat too long, and that will be as fatal as if it were too great. One of the best contrivances we have seen a long time was Mr. Rivers's forcing-houses at Sawbridgeworth. These were warmed by means of hot water, which was heated by a common Arnott stove, and conveyed all round about the house by means of shallow tanks; but the mode of conveying the water has little or nothing to do with the means of heating it; for some prefer tanks, others pipes, others open gutters. All may be right according to their own means of applying the water; but there were many objections to the common Arnott stoves. They were ugly, ill-formed, and very ill-adapted for any place of show, and, except when applied to the heating of water, they were injurious to the very air itself in the apartment which it heated. This has always been the objection, as to conservatories, where a very slight degree of heat is required, and, except in frost, none at all. It has often struck us as an odd thing, that whatever ugly pattern is started by a patentee or inventor, seems to be the fixed, unalterable fashion during the patent; smaller or larger than the original may be had, but equally ugly and unsightly it must be, or the public would never believe it was the same patent. We have recently seen a considerable improvement effected in a stove adapted for heating a conservatory, a small propagating house, or an apartment in a dwelling-house, or even a hall; and some of the disadvantages of the common Arnott stove are got rid of, and the capacity of the apparatus is greatly increased, as may be seen by the following particulars supplied by the patentee:—

"No. 1 stove will warm a room twenty feet square and ten feet high, *thirty degrees above the atmosphere* at the coldest known period, by actual experiment,—all parts of the room being kept close and free from draughts. No. 2 will average twenty-five feet square, as above, and No. 3 thirty feet. This is an important improvement over all stoves, and obviates the objection to stoves in general for warming conservatories. In the first place, the '*dryness of the air*' is overcome by placing on the top of the stove (forming an ornamental vase), a receptacle for water, lined with enamel, and producing evaporation from two quarts of water in the twelve hours. The slightest alteration of this would make it feed hot-water tanks or pipes, to be conveyed all over a hot-house.

"Secondly, stoves of all kinds have been objected to, because they are apt to scorch the plants in their immediate vicinity. These stoves are prepared with pipes from the draught-holes or gussets, so that the space between the inner and outer cylinder, or case, can be filled with sand, breeze, brick-dust, or any other good non-conductor. This prevents the external case, which is two inches distant from the fire or furnace-pan, from being overheated; and, at the same time, should the fire accidentally go out, the body of sand would keep warm many hours."

The improvement is called Nettleton's Patent Stove. Slow combustion, as in the true Arnott stove, is the guiding principle here; but the stove is made truly ornamental, and may be adapted most admirably to any apartment, however well appointed and furnished. The great advantage over all other stoves is the length of time it will burn without feeding. This will burn twelve hours when properly fed;—enough for the longest and coldest night in winter. If the stove be wanted for the purpose of heating water, to be conveyed about the premises in pipes or tanks, as in the case of Mr. Rivers's application of the old Arnott stove, all that is required is to have a small boiler communicating with the tank or with larger pipes, by means of a small leaden pipe, which will be found to heat a very large body of water, the cold returning by another pipe, and thus keeping up the circulation, which, although apparently slow, is rapid enough for all purposes. But we should not be afraid to try the stove alone for a small conservatory. They are highly ornamental and well worth attention, as, indeed, are all improvements on any given useful novelty. The combustion can be regulated to anything according to the quantity of air admitted and draught created, by the opening or closing of a valve. Upon the whole, therefore, Nettleton's Patent Stove, for a small conservatory or green-house, will be found ornamental as well as useful; and if applied in the manner we have mentioned to heat water, may be made highly effective for propagating or forcing-houses on a small scale. The Chunk stoves, said, by Mr. Wilmot of Isleworth, to be effective, are ugly and troublesome; and twenty other things have been recommended that are anything but inviting. The best of them was Arnott's, but it was ugly and not powerful; and in Nettleton's we have a thing more effective and far more handsome.

TROPÆOLUM EDULE AND PEREGRINUM.

In a former notice of this genus, mention was made of many that were in common cultivation among persons who professed to grow anything like a collection of plants; and, as a matter of curiosity, perhaps few genera afford a greater contrast in respect to the form, colour, and habit of growth. Those we mentioned were selected for their difference from each other; and since that notice was written, we have obtained the drawings of two other species or varieties. T. edule is a vigorously growing variety, already fully described; but T. peregrinum is more curious than beautiful. It has been imported under other names. T. canariensis, for instance, so called, proved to be the same thing when raised from imported seeds, and, strange to say, exhibited, in a very few plants, hardly two which bore flowers of the same size; and, though all were of the same fringy or notched character, some were more handsome than others. It is not, however, much of a favourite among the choice selections, on account of its weedy appearance. Nor is it a good one to use for the purpose of hybridizing. The notched or serrated, or fringed petals, would certainly not improve any other of the kinds by crossing; nor is it the best yellow. By crossing some of the smooth-edged, highly coloured varieties with others of good habit, something out of the ordinary way would, perhaps, reward the operator, but this is so much a matter of taste, that to direct would be idle.

Tropæolum edule.

Tropæolum peregrinum.

THE GREEN-HOUSE, HOT-HOUSE, AND STOVE.*

If these three horticultural buildings were of importance when their existence was confined to the establishments of the wealthy, how much more so are they now that the reduction of glass to almost a nominal price places them within the reach of nearly every amateur gardener! The devotion of a volume to the instruction of those who could command them under the old and exclusive system was a work of no small courage, but, now that everybody requires to know something about the matter, and even London houses are being fitted up in all directions with conservatories, or some other garden-house, the work comes forth as fresh and novel among a new race of readers, as if it had never previously existed. The author of the "Kitchen Garden" and "Flower Garden" was not half so fortunate in those works as he has been in the "Green-house, Hot-house, and Stove," for in this latter work he is at home, whereas in the former he drew largely on other people's resources, and was not always happy in his choice. In the "Flower Garden" especially, as we have already had occasion to notice, he tumbled over writings long since banished by practical men. But as regards these two volumes we have "said our say," and so we will have done with them. The possessor of the smallest green-house or conservatory will find in the work before us a fund of information and entertainment, for the author has truly begun at the beginning. A large space is devoted to the buildings, and the different modes of heating them, and then comes a very complete treatise on the most beautiful of all tribes, the Heaths. In this, however, there is nothing very dissimilar to M'Nab's, which seems to be the foundation of all good Heath culture. There is a passage, however, that we cannot quite understand; speaking of M'Nab, he says:—

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* The Green-house, Hot-house, and Stove. By Charles M'Intosh, F.H.S. London: W. S. Orr and Co. Amen-corner.

"There is one branch of culture *in which we differ from the talented writer above quoted;* he recommends *a partial degree of shade during the hottest days of the summer.* In this particular the Messrs. Loddige agree with us, as do most of the continental cultivators. This, however, may be less important in the latitude of Edinburgh than in that of London, and is certainly much less so there than in most parts of France, or the south of Germany, and for that reason it may not be noticed in the excellent directions laid down by Mr. M'Nab. Messrs. Loddige follow the continental fashion of shading by means of long slender branches of birch or other deciduous trees, which are laid over the roof of the house, breaking the full force of the sun's rays, while, at the same time, the air is not much obstructed. Our practice is to shade by spreading netting over the roof, and latterly by having a fine thin canvass awning, mounted on rollers, on the top of the house, which is let down or taken up at pleasure."—P. 67.

Now, for the life of us, we cannot see in what point the author differs from M'Nab. "He recommends a partial degree of shade during the hottest days of the summer." Well, what is Messrs. Loddige's "branches of deciduous trees," or the author's "net over the roof," but partial degrees of shade? We confess we cannot see the difference we were prepared for. We mention this because we think it very likely to puzzle others; and, perhaps, because when we criticise people of high standing in their profession, we have no right to pass over anything. The Geranium-house comes next in consideration after Heaths. This flower is introduced with a few appropriate remarks:—

"THE GERANIUM-HOUSE.

"The late Mr. Colville was amongst the first who saw the propriety and adopted the practice of growing the Geraniaceæ in a house by themselves. Since that time many have followed the example, and, judging from the fine specimens brought to the public plant exhibitions within these last three years, we are led to think that in no department of plant culture has such a rapid improvement been made as in that of Pelargoniums. To grow these numerous and splendid plants to perfection, requires a separate house for themselves, and whoever has seen those of Hill, at Hammersmith, Cox, of Chiswick, and Gaines, of Battersea, as public cultivators, and those of Sir John Broughton, or R. Jenkinson, Esq., will admit, we think, that they richly deserve a house for themselves. The Geraniaceæ have the following attractions; namely, they are easily kept propagated, and flowered; they continue nearly the whole season in bloom; present almost infinite variety of colour and form, and are much better adapted for standing in rooms uninjured than most other plants. New varieties are readily originated by cross impregnation, and these are readily increased by cuttings, the simplest of all modes of reproduction. If the majority of Pelargoniums are deficient in fragrance, nature has made up for that apparent deficiency, by the splendour of the blossoms; and, as it were, to equalize her gifts, certain kinds whose flowers are less showy, nay, even of a dingy hue, have a delightful perfume; some during the evening and night, and others when rubbed against, or when the wind lashes the leaves and branches against each other.

"Few genera of plants exhibit more fully the industry of the cultivator, or demonstrate more clearly the control he exercises in producing varieties, than in the case of the Geranium or Pelargonium. Hundreds of varieties, which are to be met with in the collection of florists, are the fruits of his ingenuity; for, however strange it may appear, it is a positive fact that not above a dozen true species are to be recognised amongst them. It is, therefore, now only in the strictly botanical collections that true species are to be seen, they having given place to sub-species, originated by hybridizing. With the exception of three or four species, the whole of this splendid tribe, amounting to nearly three hundred recorded species, and above five hundred sub-varieties, have been either introduced or originated in this country within the last fifty or sixty years.

"The term Pelargonium is derived from the Greek name for a stork's bill, in allusion to the seed-vessel, which resembles the beak of that bird; it was separated from the Geranium by the late learned Monsieur l'Héritier, as was the Erodium, which was formerly included under the general name of Geranium also; for although we are in the very general habit of using the term Geranium, Geranium-house, &c., when alluding to Pelargoniums, we must admit that this is an inaccuracy of expression which has nothing but habit to sanction it.

"The late excellent and learned Sir James Edward Smith appears to have entertained no very high opinion of hybrid varieties of this family. 'This vast and favourite genus,' says he, 'for which we are almost entirely indebted to the Cape of Good Hope, consists of a number of well-marked species. But that number is greatly augmented in almost every book, by the admission of spurious hybrid species or varieties, which continually start up from seed, wherever many of the primary ones are cultivated, and are for a while propagated by cuttings and even by seeds; sooner or later, however, they, for the most part, vanish before the eyes of those who witnessed their origin.' Great confusion has arisen in botanical works, for which the authors are much to blame, in consequence of admitting sub-varieties of known hybrid production, and also by registering many very doubtful ones in their works as species, for it must be allowed, that admitting them into works of science is replete with the greatest inconvenience."—Pp. 91, 92.

The number of recorded species rarely troubles us, we have but little respect for recorded species; and probably, if we knew all, these are not a tenth of the number; for the freaks of nature do the work of the florist admirably, and many subjects are introduced as species which are nothing but varieties. The mode of culture is given with a good deal of precision, and some tact, and it is well worth following by those who desire to succeed. We next come to the Camellia and its treatment, and the house recommended will do for other subjects, as the author observes in introducing the Camellia-house, which, after all, is but a green-house:—

"THE CAMELLIA-HOUSE.

"The Camellia-house, besides this splendid genus of flowering plants, might also contain the magnificent Nepal Rhododendrons, the best varieties of tender English hybrids, as well as the Chinese Magnolias, whose rich perfume would amply make up for the absence of fragrance in the two former genera, as well as some other plants of kindred habits. Of the genus Camellia, there are in this country at present six species, and above two hundred varieties; and the collection of these plants on the continent are still more extensive. We have seen in one collection alone, that of M. Makoy, of Liege, in Belgium, above two hundred and twenty varieties of greater or less merit; and in the collection of M. Parmentier, of Enghien, in the same country, no less than four hundred varieties. There appears to be at present quite a mania on the continent for increasing the number of varieties of this plant, and in this, as in most similar cases, many varieties scarcely differ from each other, certainly not so much as to induce us to recommend above one-third of the number for general purposes.

"Few plants are more easily cultivated than the Camellia, particularly when they are grown in a house by themselves; and few plants are so universally admired. Many persons are, we believe, deterred from cultivating Camellias, from an erroneous supposition that they require the accommodation of a conservatory or green-house, and cannot be grown without;—nothing is more absurd than this, for not only can Camellias be cultivated in great perfection in pits or frames, protected merely by the glass lights; and occasionally, in the most severe weather, by a mat thrown over them; but they are also found to thrive exceedingly well when planted out in a warm and well-sheltered border or shrubbery, without any protection whatever, excepting a little dry fern, moss, or litter, laid over the ground on which they are planted. Certainly, to have Camellias in the first degree of excellence, they should be kept in a glass-house; but that they will flower and grow well in the open air, in favourable situations, is also certain; and the day may not be far distant when the Camellia will be found as much the ornament of our shrubberies as the Pyrus japonica, Corchorus japonica, Aucuba japonica, and other plants from the same country, and which were all, within our recollection, treated as green-house plants, although experience has long ago taught us that they are as hardy as any plant in our shrubberies.

"Of the plants possessing sufficient beauty or fragrance to be admitted into this description of house along with the Camellia, we may mention Nerium oleander, and its splendid varieties, Illicium floridanum, Daphne odora, Luculia gratissima, Magnolia fuscata, &c. And as scandent plants, to be trained up under the rafters of the roof, we would recommend

Kennedya, various species, Wistaria chinensis, Caprifolium japonicum, Tecoma grandiflora, Passiflora Loudonii et kermesina, Jasminum grandiflorum, &c. A house so furnished would be sufficiently interesting throughout the year, and never without blossom, or the most delightful fragrance. Such a house, perhaps, does not exist; but we cannot surely be accused of extravagance in anticipating such an event, when we consider the rapid strides that the principles of order and taste are making amongst the followers of Flora; and when these principles are understood along with the practice of Floriculture, we shall see houses arranged according to the rules laid down in the foregoing pages."—Pp. 109, 110.

The brief account of all the other subjects to be cultivated in the same house form excellent memoranda, which we take it is all they are intended for. There is a good space given to the Rhododendron, which is treated well, and then follows in succession—

"Magnolias.—The species of this genus that may be advantageously cultivated in the Camellia-house, are those that are natives of China, viz. tomentosa, obovata, fuscata, anonæfolia, pumila, and the hybrid Soulangiana.

"These are all plants of easy culture, requiring just the same treatment as Camellias. They are increased principally by grafting and inarching upon stocks of M. purpurea, and sometimes by buddings, cuttings, and layers; the former is by far the most expeditious and certain mode.

"Nerium Oleander. — This splendid species, with its varieties, is very readily multiplied by cuttings, planted in light, rich soil, and placed in a mild bottom heat, without covering. They also root freely, if the ends of the cuttings be placed in a bottle of water, and placed in a frame, or hot-house. A light, rich soil is most proper for the plants when rooted, and an abundance of water at all times: the very name, *Nerium*, is derived from damp, because the plants grow naturally upon the banks of rivers, and in marshy places.

"This is an old inhabitant of our green-houses, having been introduced from the south of Europe in 1596; and if attention is paid to its cultivation, which is exceedingly simple, few plants are more beautiful when in flower, in which state it remains a long time.

"Illicium floridanum.—The foliage of this plant is exceedingly fragrant; so much so, that the name is derived from *Illicio*, to attract. The Chinese use the leaves and flowers for seasoning some of their finest dishes, while their neighbours, the Japanese, decorate the temples of their deities and the tombs of their friends with the branches of this plant. The most usual method of increasing this species, and also I. anisatum, is by layers; but the ripened wood in both roots will vegetate in time, if planted in sand, or sandy peat and loam, and placed in a cool frame, and otherwise treated as directed for Camellias.

"Daphne odora.—This very odoriferous plant is readily increased by cuttings of the young shoots planted in sand, or light peat and loam, in a slight bottom heat, and close, moist atmosphere. Light peat and loam, of equal quantities, is the proper soil for them to grow in. To flower them well, the cultivator must be sparing of the knife, as the terminating buds of the shoots produce leaves, and the lateral ones flowers; a circumstance noticed by Linnæus as being characteristic of this genus.

"Luculia gratissima.—This very fragrant plant is very readily increased by cuttings of the ripened wood, and also by layers, either in heat or not. The soil best adapted for it is sandy loam and peat.

"Kennedyæ, various species.—These all seed freely when old plants, and from them a plentiful supply of young ones can always be obtained. They also strike by cuttings planted in sand, and covered with a glass, in a cool place. Peat and loam is the proper soil for all the genus.

"Wistaria chinensis. — This splendid flowering plant should have a place in every garden, both in the green-house, and on the open wall, where it flowers abundantly, but is sometimes liable to be injured by late spring frosts. It is a very good plan to adopt with this plant, to plant it against a wall near to the Camellia-house or green-house, and to train it not only on both sides of the open wall, but also to introduce a branch of it into the Camellia-house or green-house, when it will come into flower earlier than on the wall, and be secure from the frost. The branches trained on the open wall will flower also in succession: those on a south aspect first, and be succeeded by those on the north. The plant is rapidly increased by laying the shoots in pots plunged in the ground at the bottom of the wall. It sometimes produces seeds.

"Caprifolium japonicum and Jasminum grandiflora, are both much esteemed for the fragrance of their flowers, and also for their beauty. They are both readily increased by cuttings of the ripened wood, planted in sand, under a glass, in a cool place. They also luxuriate in a soil of equal parts of light loam, peat, and very rotten dung.

"Tecoma grandiflora.—This splendid plant is a native of China, but is sufficiently hardy to flower well in the open air of this country. Plants of it have existed against a wall in the gardens at Claremont, and elsewhere, for the last twenty years. It is, nevertheless, well worthy of a place in the Camellia-house, where it will flower earlier than upon the open wall. It succeeds in a soil of peat and loam, and is increased by eyes planted in pots, placed in a mild temperature. These must, of course, be taken off early in spring, cut to about an inch and a half in length, and covered about half an inch with mould, in the same manner as practised for propagating vines. We believe this method was first practised in the Claremont-gardens, but is now pretty generally followed. Formerly, this plant was rare, and considered difficult to increase: the usual method being by cuttings of the roots, and by laying. Plants originated from single eyes frequently flower the same year, when about a foot high.

"Passiflora Loudonii, and P. kermesina, are two splendid varieties of this popular family. They are increased by cuttings of the young shoots planted in sand, and covered with a glass, and also by layers and seeds, when the latter can be obtained. Any moderately rich, light soil suits them; and, contrary to the generality of the genus, they will flower well in a low temperature. Speaking of this plant, Mr. Lindley says,—'This is, beyond all comparison, the most beautiful species in cultivation, except racemosa. Its flowers have a richness of colour which art cannot imitate; they are produced in great abundance at almost all seasons; and in consequence of the length of the slender stalks from which they singly hang, the whole plant has a graceful aspect, which is unrivalled even among Passion-flowers.' It is rather a singular circumstance in the family of Passiflora, that, although all of them are fruit-bearing plants, they are shy in fruiting unless impregnated with the pollen of each other instead of that of their own.

"Tacsonia pinnatistipula.—This elegant climbing plant is closely related to Passiflora: it is a native of China and Peru, from which place it was introduced by Mrs. Marryat, of Wimbledon, one of our most eminent patrons of floriculture. It is easily increased by cuttings of the previous year's growth, planted in pots filled with sand or sandy loam, and placed in a slight bottom heat. It produces abundance of fruit, from which seeds can be obtained, and vegetates freely in light, rich mould. They should be sown as soon as gathered."—Pp. 131—134.

The Bulb-house comes next, and, independently of the excellent directions for the treatment of all the principal families, there is a catalogue of everything beautiful belonging to it. We then come to the Succulent-house, in the heating of which the author introduces various plans, and refers to the succulent-house at Claremont, which in its day was certainly one of the most perfect things of the kind. The parties who grow succulents in any degree of perfection, or to any extent, are not numerous, and perhaps the most beautiful and ingenious thing of the day is that at Mr. Williams's, at Hendon; the neatness, extent, arrangement, and general appearance of the collection there renders it one of the lions of the metropolis. Although there are more extensive and more costly collections, there are none more interesting. The treatment of these subjects is judicious, and the instructions plain, and when all the varied tribes of plants which form the chief features in a succulent-house, have been enumerated, we pass to the mixed green-house, which affects every body who has only one, and this extends to tens of thousands. Here we have excellent arrangements laid down in very understandable language, highly useful in their collective character. And after these we have notes of the different families, which we think it quite fair to quote; and as, in the order of the book, there are paragraphs about soil, and shifting or potting, we will precede the notes by quoting these also:—

"Soil.—The majority of green-house plants which come under the present head will flourish to the utmost perfection in a soil composed of half light turfy sandy loam and peat earth. Some few, such as Protea, prefer a rich loam of a middling texture, and others, such as Pimelea, Roella, Lechenaultia, prefer a sandy peat alone. The fresh soil of a properly selected piece of uncultivated land, having abundance of fibrous vegetable matter contained in it, should be preferred. All garden mould, or that which has been under a state of cultivation, should be carefully rejected.

"Shifting or Potting.—Enough has been already said upon this subject, under the various heads already noticed, to render any lengthened description of the process unnecessary here; we will only refer to what has been said on the subject, and state that all green-house plants should be shifted at least once a year, many of them oftener, according to their habits of growth or the purpose for which they may be intended. There is one very general and very great fault in shifting plants, and that is, placing them in too large pots; nor is this a subject that any written directions can explain or rectify. We know of no other rule that can be at all considered as bearing on the case, or that we have words to explain, other than proportioning the size of the pot to the number, size, and form of the roots. Thus a Heath, or Azalea, requires a much less pot to grow in than a Pæonia or Fuchsia of the same size; and such plants as Chrysanthemum, Calceolaria, &c., that require to be grown rapidly to increase the number and size of their flowers, and also those being only herbaceous, that is, producing a fresh volume of herb annually, require much larger pots than the slender-rooted Selago, or Chironia. Instead of calculating by the size, number, or nature of the roots, it is too general a practice to calculate by the size of the plant only.

"AZALEA.—The Chinese varieties of this splendid genus strike by cuttings of the young wood taken off close to the ripened shoots, planted in sand, and placed under a bell-glass in a mild bottom heat. The best soil for grown-up plants is a sandy, turfy peat, and the best situation the most sunny while in the green-house, till after they flower, when they may be placed out of doors, but not in an exposed place. They must be kept in a cool pit during winter, and taken into the house in February or March, to produce their flowers.

"INDIGOFERA.—This genus seeds freely, from whence young plants may be obtained, the seeds to be sown as soon as ripe. They also increase by cuttings, planted in sand and placed in a cool situation. The best soil for them is light sandy loam and peat, the larger proportion of the latter.

"PIMELIA.—Cuttings of the young wood root freely, planted in sand and placed upon a slight warmth without bell-glasses. They often seed abundantly, and in this case should be sown in fine sandy peat soil, slightly covered, and placed in a cool situation near the glass. Sandy peat with a portion of vegetable fibre is the best soil for them.

"POLYGALA.—This fine flowering genus requires the same soil and treatment as the last.

"CHIRONIA is propagated by cuttings taken off in spring, planted in sand, and covered with a bell-glass in a cool situation. A light sandy loam and peat is the most suitable for them.

"PROTEA.—This fine genus has been subdivided into various new genera. The species which are natives of the Cape of Good Hope are almost all splendid when in flower; but it is to be regretted that so few of them are at present to be found in our gardens. The late collectors, Niven and Mason, sent many species to the Kew Garden, and also to the Hammersmith Nursery; but in both collections few of them are now to be seen. A rich, loamy soil is suitable to the majority of them. They are very difficult to increase by cuttings, but seeds of them can readily be obtained from the Cape, and occasionally they ripen seeds in this country.

"ROELLA is multiplied by cuttings of the young wood, planted in sand, and placed on a slight heat under a glass. The grown-up plants prefer a sandy peat alone, and small pots.

"SALVIA.—No genus of plants strikes more freely, or is grown with less trouble.

"SELAGO.—The young shoots root freely in sand under a glass in a cool place. Light loam and peat, of each equal parts, will grow them to perfection.

"SWANSONIA.—Seeds are readily produced, and vegetate freely if sown in peat and loam. Cuttings root with little difficulty, but seedlings make the best plants.

"ACACIA.—This numerous and free-flowering family do not readily increase by cuttings, but full-grown specimens seed abundantly. A. pubescens, one of the most splendid of the family, is increased by cuttings of the roots, which should be planted in peat and loam, and placed in a mild, moist temperature. Seeds are occasionally produced. But the facility of procuring seeds of most of the genera from New Holland renders these plants plentiful in our gardens.

"ANTHOCERCIS.—Cuttings of the half-ripened shoots, planted with sand, root when placed in a cool situation, and sometimes those of the young shoots also succeed when placed in a slight heat, covered with a bell-glass. It is by no means a genus that is rapidly propagated, nor is it without care that the plants will live long. The most airy situation in the green-house is the best for them.

"GENISTA, GOODIA, PODALYRIA, and CROTALARIA, will all strike by cuttings of the young wood, planted in sand, and kept cool; but the best method of increasing them is by seeds, which they produce freely when the plants are full-grown. These should be sown in peat and loam, the soil they prefer when full-grown.

"GNIDIA.—This genus is easily propagated by cuttings of the young wood, planted in sand, and placed under a glass. The soil they prefer is light loam and peat.

"LINUM.—The shrubby species of this genus root freely from cuttings of the young wood, and the herbaceous or soft-wooded kinds produce seeds freely, which should be sown in peat and loam, the soil the plants thrive best in.

"CALCEOLARIA.—The shrubby species and varieties of this fine-flowering tribe root readily by cuttings planted in finely-sifted, light, rich mould, and the herbaceous sorts divided at the roots, and both produce seeds which vegetate freely if sown on the surface of pots of fine, light, rich mould, in February. When they have vegetated, as soon as they will move, the seedlings should be planted out into other pots, and kept in a very slight heat to forward them. By the latter end of May or the beginning of June they will be fit to plant out into a rather cool shaded border, when they will flower till the end of autumn. From these the finest varieties should be selected, potted in autumn, and kept in a cool pit or green-house during winter, when they will flower beautifully the following summer. Cuttings taken off in autumn, and kept in a dry, airy place, where frost is merely excluded, if potted into larger pots in spring, will also flower in great perfection during summer. The whole family is very subject to the attacks of green-fly: when that is observed, recourse must be had to the fumigation of tobacco, and a slight syringing over their tops the day following. The shrubby sorts are so hardy that they will stand in the open border uninjured during ordinary winters, and so also would the herbaceous kinds were it not that they suffer from damp.

"Gardenia.—Most of this genus are hot-house plants; but the two species G. florida and G. radicans are best kept in a cool pit from the time that they go out of flower till it be desirable to make them form flower-buds for the succeeding season, when they should be shifted into fresh mould, plunged, or rather set, on the surface of a pretty strong bottom heat, a moist steam heat being kept up in the pit, and the lights kept rather closely shut. They will by this means show abundance of bloom buds and beautiful fresh foliage, and when they are just about coming into bloom, if removed to the green-house or drawing-room, they will continue longer in flower, and perfume the whole apartment with their delightful fragrance. They are readily propagated by cuttings of the last year's wood, planted in rich, light mould, without glasses, in a humid, rather warm atmosphere.

"Alonsoa, and Bouvardia. — Both of these strike root freely by cuttings of the young wood placed in a slight heat, without covering; their whole culture is of the most simple kind; a soil half peat and half loam suits them very well.

"Lobelia.—This genus has been recently divided into several genera: these are included under the original name, Lobelia. The small species, such as L. eriniodes, &c., seed freely, and are increased by cuttings of the young shoots. The larger species, such as L. tupa, &c., multiply also by seeds, cuttings taken off close to the crown of the root, just as they are coming up in spring, and also the roots may be divided. They all prosper in a rich, light soil.

"Fuchsia.—There is no genus that can be more readily increased; the young shoots root freely, and they will grow well in almost any kind of soil.

"Chrysanthemum.—The numerous varieties of the Chinese species of this family increase by cuttings, by dividing the root, and occasionally by seeds, but these seldom ripen in this country. The operation of propagation may be commenced almost at any season, and in any soil.

"Plumbago, and Hibiscus.—These two genera are usually kept in the stove. P. capensis and H. rosa-sinensis, with its varieties, are much better in the green-house. They are propagated by cuttings of the half-ripened wood, planted in sand, and placed in a mild heat. A soil composed of good peat and light loam is the best for them.

"Anigozanthos.—This singular and handsome genus is increased by dividing the plant near its roots: it grows well in a peaty soil, or in peat and loam.

"Canarina.—This genus is not by any means common, notwithstanding its great merits. It is increased by dividing the roots, and by exciting them in spring, and taking the young shoots off when about two inches long for cuttings. These are planted in sand, and root freely in a moderate heat under a glass. A peat and loam soil is sufficient for it. The roots should be kept dry during winter, like the Dahlia, but kept in the pot.

"Arctotis and Gazania are both increased by separation at the roots, and also by cuttings, which grow freely in a soil composed of peat and loam.

"Erythrina, Crista-Galli, and Laurifolia, are plants of great beauty, lasting long in flower. The roots should be kept dormant during winter, and excited about the end of February, when young cuttings will be obtained from the numerous shoots that they will send up. These, taken off close to the root, and planted singly into small pots filled with sand and placed in a mild heat, will root freely, and if forwarded in the hot-bed or stove will flower the same season. But the best flowers will be obtained from the old plants, which can scarcely be put into too large a pot, and placed in the green-house. So hardy are both species, that they will stand out of doors planted in the ground, with a very slight protection. A rich soil should be given to them, as that will add much to their size, and to the beauty of the spikes of flowers.

"Brugmansia.—This genus is readily increased by cuttings taken off when quite young from near the root. If planted in any light, rich soil, they will grow rapidly. They require repeated shifting, because the larger the plant can be grown before flowering the better.

"Clerodendron.—Of this genus the species C. fragrans is a beautiful and fragrant green-house plant, although generally kept in the stove. It is readily propagated by cuttings of the young wood, placed in a warm situation. A light, rich soil is requisite to have this plant in perfection.

"Humea is increased by seeds sown early in spring, and treated like any pot-cultivated annual. It often flowers the first season, but always the next.

"PÆONIA.—The Chinese shrubby species are increased by layers, by cuttings, by grafting them on roots of one another. They are hardy enough to stand our winters in a sheltered spot, but, as they flower so early in the season, their flowers are apt to be cut off by late frosts. When grown in pots, they may be kept most of the year in a cold pit, and brought into the green-house to perfect their flowers, which are magnificent. Any rich, good soil suits them to grow in.

"CINERARIA.—Many of the species produce seeds, from which of late years some fine hybrids have been obtained. They all strike very readily by cuttings, and also by dividing at the root. No plants are more easily cultivated than these.

"ECHIUM.—The Cape species of this genus are splendid-flowering plants, but too much neglected in modern cultivation. They ripen seeds, and are easily increased by cuttings, planted in sand, and placed in a cool situation. Peat and loam is a good soil for them.

"ANAGALLIS.—This pretty little genus is readily increased by cuttings, which strike in sand. The plants prefer light, sandy loam and peat.

"LECHENAULTIA.—The young tips of the shoots, taken off about an inch long, and planted in sand, covered with a bell-glass, and placed in a dry cool place, strike freely. The grown-up plants prefer peat and loam to grow in, but by far the greater portion of the former.

"PSORALEA.—A genus easily cultivated: the young or the half-ripened shoots root freely, and seeds are also frequently produced. They thrive well in a peat and loam soil.

"CORONILLA.—This genus is readily increased by cuttings of the young wood, planted in sand, left uncovered, and placed in a close heat. Peat and loam, of each equal parts, is a good soil for them.

"In regard to the propagation of greenhouse climbers, viz. Passiflora, Jasminum, Hibbertia, Convolvulus, Sollya, Billardiera, Dolichos, Bignonia, &c., they strike by cuttings in the same way as directed for the plants above. They require a rich soil and considerable space for their roots to spread in, as the object is to make them grow luxuriantly, and flower abundantly."—Pp. 210—218.

We now come to the Conservatory, and here there is great variety of form, fashion, and of plants to fill them. No two persons manage a conservatory alike, and we remember to have been sadly disappointed on entering some of the most costly in the kingdom, to find the inside wretchedly planted or furnished, or both. There is no branch of modern gardening upon which so much depends as the preparing for a continued supply of flowers for the conservatory; great prudence and forethought are required to prevent the gardener from being left in the lurch at some particular seasons. It is not enough to produce flowers, but they must be neatly grown, on handsome plants, and there must be a succession. All the other horticultural buildings must be put in requisition for the feeding of the conservatory. The advice, therefore, on this subject is acceptable and important; not only for building, but also for the heating, the management of the plants previous to and immediately after they have been placed in the house. There is then some notice of a protecting tent, as it is called. It means, however, nothing more nor less than a canvass house to place the plants under in winter, while we think it more important in summer time, where the plants can be shaded or exposed as the weather seems to dictate. And though the structure is given, we prefer the plan of a first-rate Tulip-house, because one side or other can be opened, the top can be rolled up or let down, and there is a much more complete command than can be got by means of the side apparatus, which are nothing more than canvass blinds, which pull up or let down at pleasure. Reference is made to the Horticultural Society's verandah, or front covering along their wall; but that is only for winter-time, to lessen the power of frost. The cold pit is a much more rational protection for the winter-time, and perhaps for Erica is the best that can be constructed or used. We now glance at the dry and moist stove for tropical plants, in which the management is well laid down for the general collections. And we shall close our quotations with notes on a few particular and highly favoured subjects:—

"GLORIOSA SUPERBA.—This splendid plant, as the name fully indicates, is of great beauty and singularity. It is, nevertheless, but rarely met with in collections, and much more rarely is it seen in flower, although few plants are more easily cultivated and flowered. The following directions, by the late J. Sweet, of the Bristol nurseries, have been followed by us for several years, and with complete success:—'Its failure,' he justly observes, 'arises chiefly from the defective method in which the roots are preserved during their inaction, and from the want of proper treatment when they first vegetate in the spring. Injured at these periods, the plants generally continue through the summer weak and unpromising, throwing up only a few small stems, which do not flower in sufficient strength or beauty.' The following is the essence of his judicious practice. In autumn, when the stems have died down, and left the root, which is a considerable-sized tuber, perfectly ripe, it is removed in the pot, and placed upon the top of the hot-house flue, at a safe distance from the fire. The intention being merely to keep the mould round the tuber perfectly dry, one of the shelves on the back wall of the stove will answer as well. Here it is secured from the water which is used in syringing the house, by inverting another pot over it. If the tubers be small, several may be kept in the same pot during winter, having the mould made firm round them, for the exclusion of air: the same mould that they were grown in should be used for this purpose, for fresh earth or sand, he justly observes, would stimulate them to move early. About the second week in March, they should be potted, putting one or two, according to their size, into each pot, the pots to be six inches over. The soil most congenial to them is fresh loam, mixed with an equal quantity of peat earth ; the loam to be not over-much enriched with dung, nor too heavy. The roots are to be parted if fit for separation, but by no means if they do not part freely. They should be planted about two inches deep, and plunged into a bottom heat equal to ninety-five degrees. Water is sparingly applied at first, but increased after the plants have set a growing ; but this must never be applied in great quantities. If kept in a brisk heat, the shoots will extend for six or eight feet, or more, and will require to be trained to a trellis, or under a rafter, when they will flower in great abundance and perfection.

" Ixora.—A genus of East Indian plants, of great beauty, the flowers of which are offered to Ixora, a Malabar idol, in consequence of their splendid appearance. Like the last, this is a genus, some of the species of which are met with in most collections of the tropical plants, while it is very rare to see one of them in flower. On the continent this is different, and we find the Ixora coccinea, in particular, cultivated for the public markets.

" The culture of the genus is, that they require a period of rest, which continues for four or five months, that is, from July till February, when they may be placed in the green-house amongst other plants, or in a pit where frost is completely excluded. In February they should be repotted, and then plunged into a mild moist heat, or set on the surface of a bed of tan, leaves, or dung, in a close pit, and kept in a temperature of from sixty to seventy degrees of heat. In this pit and by this mode of treatment they will show fine heads of flowers by the beginning of April, and may then be removed to the plant stove to flower, where they will continue in great splendour for a long period.

" Gloxinia, Sinningia, and Gesnera, are three genera of plants, half bulbous and half herbaceous. They require, after flowering, to be kept moderately dry till their leaves and stalks die down, or become ripened, when they should be set upon a shelf in the stove, and kept dry till they show signs of vegetation, or until it may be desirable to bring them again into a state of active growth. At that period they should be shifted and supplied with water, moderately at first, but as they extend in growth it should be augmented. They should be brought to the front of the house to flower, as they are, particularly the two former genera, of dwarf habits, and would otherwise not be seen to advantage. Gloxinia and Gesnera may be increased by planting the footstalk with the leaf attached. The other is readily increased by cuttings, and also by the same means.

"Quisqualis and Combretum.—These are two splendid genera of climbing stove plants, requiring to be planted out in the borders of the house or in large pots. The principal feature in their culture different from other plants which inhabit the stove is, that while in a deciduous state they should have all the wood of the preceding season's growth cut into one, or at most to two eyes or buds. By this simple process they will flower abundantly: each shoot, for the most part, which springs, will be furnished with a spike of flowers at its termination.

" Ipomæa.—This is a genus of fine-flowering climbing plants, with large tuberous roots, and tender herbaceous stems. When these die down, the roots should be set upon the shelves, in a dry place, during winter ; in spring they may be taken down and repotted, and placed in a close pit for a week or ten days, when they will have begun to vegetate, at which time they should be brought into the stove and placed near a pillar, rafter, or similar support, to which the shoot should be trained.

" Rhexia and Melastoma.—Two numerous and fine flowering families. During winter they require little water, but not to the extent to render them entirely torpid. These, together with many other half-herbaceous plants, should be placed at one end or corner of the stove, that some attention may be paid to them in this respect."—Pp. 301—303.

The tropical fruit stove is not forgotten, nor, indeed, is anything omitted that is at all essential. The volume is got up fit for a drawing-room, with coloured embellishments, which give an excellent idea of the flowers they are to represent; and now that the reduction of the price of glass has set everybody green-house and hot-house mad, the book will be found a timely adviser, and a first-rate present for a lady. Mr. M'Intosh has not done without borrowing even in this volume, but he has made a good choice of his subjects, compared with the selections in his former works, and we do not hesitate to say, it is by far the best volume of the three.

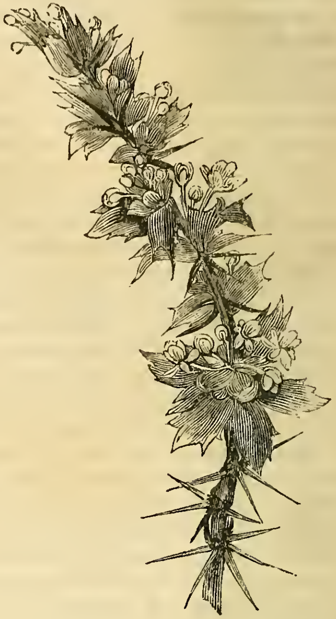
THE POTATO AND ITS CULTURE.

Among the various articles of food on which we seem all but dependent, the Potato holds a prominent place; and, strange as it may seem, though millions of tons are grown, not half-a-dozen writers can agree as to the best mode of culture, nor as to the causes of failure which seems to visit every year some unfortunate grower or other, and sometimes a good many of them. Among all the histories and treatises that we have seen, scarcely one of them agree with our practice, nor do any lay it down as a profitable mode of culture. Nearly all large growers are wedded to the plan of cutting good Potatoes into as many sets as they conveniently can, and not one in ten do this until the Potato is in a state of growth. In all stages of growth the nearer we can imitate nature in her main operations the better; improve upon them, to meet particular circumstances, we may, but violate her with impunity we cannot. Well, then, it stands to reason that whole sets must be more natural than cut ones. What are the circumstances, then, which induce, or, as some say, compel, us to use cut sets, when whole ones are more natural? Why, the economy of the operation, the saving of seed. If whole sets, of half a pound each, were to be placed at the usual distance, that which would plant half-a-dozen sets is consumed to plant one. But why use half pound Potatoes? why not use small Potatoes? A set as large as a walnut for pickling, if accidentally left in the ground when the crop is dug up, yields an abundant crop, braving the frosts of winter, and showing more health and vigour than almost any regularly planted set that has been cut. After all that has been said and written upon the subject of the feint, as it is called, and other visitations which will ere long have fashionable names to them, we hear nothing from one but what contradicts another, and we are left in a sort of glorious confusion. It may be saying but little, to say that we never cut a set, and never had a failure, because the non-failure may be perfectly unconnected with the fact of planting whole sets. The ridiculous experiments tried with Potato parings, instead of the Potato itself, would have been sadly censured had they been tried by anybody but the President of the Horticultural Society, and all that could by any possible chance have been gained by the experiment, was to show with how little of the starch the eyes would germinate; and how anybody might peel their Potatoes to eat, and set the parings for a crop; a plan which might have been handy for starch-makers, but not very useful to the cottager, who would find it as inconvenient to keep all his Potatoes till the planting season, as it would to peel all he intended to eat the rest of the year. But, while the President of the Horticultural Society was experimentalizing on Potato parings, we were doing some yet more curious things; we raised Potatoes, and a good many of them, without cutting the Potato, or disturbing the peel: we set them to work like a Dahlia. The instant the shoots were an inch long we rubbed them off, struck them in a hot-bed, and established them in forty-eight sized pots, and in this way obtained as many as two hundred plants from one Potato, which was as large, and to all appearance as plump, as when we begun. When they were planted out, in June, the balls were turned out whole, and there was even in the pots a good promising crop of small Potatoes. This established the fact that we have always contended for, which is, that in every atom of a plant there are the germs of every portion of a plant, and that the necessary conditions for their development have only to be supplied by art or nature. Here one of the small white shoots from a Potato is put into a small pot, with heat, and we have the plant complete in all its parts, stems, leaves, flowers, fruit, and tubers. We go further, we say that some circumstances develop the germs of leaf, or fruit, or flower, while those of the corresponding organs are destroyed or blighted. Hence come monstrosities, which are absurdly quoted as proofs that one organ turns into another. On taking up this crop, there was every reason to be satisfied with the result; the Potatoes were fine, and a good average produce. To expect that the Potato will grow equally well on all soils would be out of all character; but there are certain rules of culture which cannot be too well attended to; and although we do not object to cut sets, if done properly and at a proper season, we deny the saving part of the affair, and insist that the largest of the pig Potatoes, or such as are considered so, make excellent whole sets. But there is a proper and an improper time to cut them, and the want of attention to this causes one-half the disease that is among the crops of this excellent vegetable. The necessity of cutting sets at times, in consequence of the scarcity of seed Potatoes, or the large size of the only ones that can be got, must be admitted; and there are people who never for one moment think about their seed until it is in an unfit state to use; for Potatoes cannot be fit to cut when they are in a state of germination; yet we see pits uncovered where the tubers have thrown out shoots a foot or more long.

These are all rubbed off, and the Potatoes sent to market. Those who are careless enough to drive everything off to the last moment, buy them for seed. They are cut, they bleed, are planted, and it may be that all the produce are tainted with some disease which renders them worthless, or the very seed itself rots instead of coming up. We take it for granted that, although to many excellent growers of the Potato the following will be useless, there may be some, perhaps not a few, who will derive benefit from the information; and it is, at least, certain they will not be misled. In the first place, the seed Potatoes should be selected when a crop is ripened and dug up, and there is the best chance of being suited with appropriate tubers. We should, for choice, select those which are too small to bring anything like a price at the market, but not the smallest; say the size of a walnut for pickling. These we should lay on the top of the ground to have all the sun, and have them turned, so as not to sweat. If the weather proved wet long together, it would be no use to keep them out; but the object is, to dry a good deal of their moisture, and therefore, if one week would not do, on account of the wet, we should give them two. These, when dry and hard, may be put away into a dry stove, where they can be turned from time to time, and should by no means lie too thick, so as to sweat and get damp. Here they may remain until planting time. Considering that the Potato grows from any depth, it seems strange that people should be so fearful of deep planting, as to frequently cause a whole crop to be frosted in early spring, even before they are above ground. We have never feared early planting, because we plant deep, and never dib them in. Six clear inches of earth over them will resist any frost, and they will rarely come up from that depth too soon, whereas they begin to work directly they are planted. It must not be imagined that, because we plant deep, there will be any less necessity to earth up, for the Potatoes form where they can have the benefit of the air, and the fruit would come therefore close to the surface, even if the tubers were a foot deep. It is certain that deeper planting than is usual has been found beneficial; and they should be planted in drills, and not be dibbled, for dibbling hardens the sides and bottoms of the holes in wet ground, and is a bad plan at the best, though in the planting of a small plot it is the general practice. Potatoes planted in drills made by the plough are frequently not deep enough, and this is fatal if hard frost comes, even before they germinate. But the tubers once planted six inches deep, so that frost cannot reach the stem, rarely fail; and it is in our opinion, a pity that any but whole tubers should be depended on. At present, the pigs eat the best sets that can be had, that is, the largest of their chats; and it will take some time to beat it into the heads of the growers that these largest should be made a better use of. When the Potatoes come up, the earth should be laid smooth to their stems, and rather raised than otherwise, and they may grow until they require earthing. This is done to secure a covering for the young tubers, and it should be recollected that they must never be exposed, for they would be anything but eatable; indeed, the exposed part would be green, which would make them none the worse for seed, but spoil them for every thing else. Such is the way we should plant whole tubers. Now for the cut sets. The time to cut a Potato is when it is dry, that is to say, at its dryest period, before there is the slightest indication of swelling at the eye, and to this one point everybody who has had the slightest difficulty with their Potato crop should give marked attention. When cut they should be spread abroad to dry, and be constantly turned to prevent mould or dampness. Sets should never be cut too small. When once dried, sets will keep a long time, but they must be kept dry: they are much more susceptible of damp and mouldiness. We have known people to cut them in the autumn, and they have kept them on a dry floor, occasionally taking a birch broom and sweeping them from one part of the floor to the other, with a view of removing any indication of mouldiness, preventing them from heating, and examining them a little. We never knew them to have a failure; but we should never cut them, if we could get proper sized sets without cutting. As the planting time approaches, they must be the more frequently disturbed, because they are the more inclined to heat, and that hastens the germinating, which never should take place till they are in the ground; this should be without dibbling if possible; and in large crops nothing is better than ploughing furrows six inches below the surface, and letting some one follow the plough and drop the sets in at the proper distances. When the plough goes over it again the sets are covered. We speak of field culture in the common way. In this case the earthing up is done with the plough, though some prefer hand labour. The crops, so far, whether those from whole sets or those from cut sets, will be in a fair way to do well. But there are yet many other ways of planting, particularly in gardens. For field culture upon a large scale there are but few profitable modes. It is not long since Robert Arthur of Edinburgh published a work, in which he affected to solve the problem, as he called it, of the Potato, and inform us of the cause of disease. It was before the appearance of the present disease or murrain; but very few ideas were given that had not already appeared in the "Gardener's Gazette," and already been largely acted upon. Nevertheless, there is a mode pointed out which has evidently been taken from that recommended for common Dahlias years ago. It is advised that the Potatoes should be placed crowns upward in warm dung, with a coat of loam on it; that four inches of earth or peat should be covered over them, then another layer, then four inches more earth, and so on, till there is a heap three or more feet in depth. When these have grown, they are taken out and cut into ten or twelve sets each, there being only one eye to each piece of tuber. He says he has planted such sets several feet grown, and had a capital crop; but let us ask who in the world would think of such a mode on a large scale? and what object is gained by such an inconvenient proceeding? Why, the author says he gets the crop earlier by a week or two; but we think scarcely anything would make amends for so loose, and awkward, and troublesome a mode of accomplishing an object. The merely being enabled to cut the sets into smaller pieces, and confining each piece to one eye, does not compensate at all, because the same object could be effected in a less troublesome manner; for instance, if all the Potatoes were placed on a dung-bed till the eyes fairly started, they could be cut up as well as if there were six inches of haulm to every eye, and all of them would be much easier planted. But we do not approve of sets being limited to one eye; two or three are better; and a whole Potato, if it has room, and is well earthed up, at proper seasons, is always better than a set. We know it has been said that small Potatoes bring a number of small stems, and a small crop. This may apply to the smallest of all; but the eyes in a Potato which is as large as a walnut for pickling, will be found as well developed, and the haulm as strong, and the crop as fine, as any from the largest tubers cut up. This, however, is so much more frequently decided by the state of the ground and of the sets, than by anything connected with the size of the seed Potatoes, that it is not worth pursuing the subject. In garden culture there are many ways of planting, to say nothing of the sets. For early Potatoes there are several modes of proceeding without involving much expense. One of the most simple is to dig a trench at the foot of a south wall, or fence, or bank, say a foot and a half deep, fill this with hot stable dung, and when trod down there will be six inches to spare; let this be earthed about two inches, the sets placed a foot apart along the centre, and fill up level with the earth. If they come up before the frosts are over, let there be mats thrown over them on an evening; earth up the crop, and if the weather be very dry, there must be water administered from time to time. This crop will be found very early, the Potatoes being developed before the haulm would indicate their forwardness. Next to this, the planting of the Potatoes in the same way, but without dung, will be found advantageous; the south wall wonderfully aiding the germination and future growth; but the crop is never large unless watered, and it is far better not to cool them too much, a small and early crop being far more desirable than a larger and later one. The forcing of Potatoes in dung-beds or pits, is done with little or no trouble. The bed is made up as for cucumbers and melons, but with not more than half the quantity of dung. Put three inches of earth on the dung, place the sets a foot apart in rows eighteen inches from each other, and then put three inches of soil over them. Here the principal object is to give air without losing much heat, and not to give much water; when they are up, let them be earthed by putting some additional soil along the rows on each side, and not by disturbing that which is already level on the bed. The principal thing to guard against is frost, and unless it be through carelessness this is not likely to reach the tops. This crop will be found early and useful.

A very nice crop of Potatoes may be hastened by planting them in an old melon bed or cucumber frame, and the only requisite there is to provide, is a supply of matting, or other covering, to keep off the frost, which would be fatal. Air must be given on mild days, and the frames closed against cold winds, even when short of a frost. Of late years many tons of Potatoes have been planted in July, to take up in November, and use all the winter and spring as new Potatoes. The Ash-leaf Kidney, and many other early sorts, have been tried; but the kind found to answer the most completely is Chapman's Early Kidney; these are eatable, and in high perfection, from November till June. Some persons, who have ground that is clean, and pure, and free from insects, heap up a bank of soil on the rows, and dig up the Potatoes only as they want them; but in some ground they would be devoured by insects. We consider it better, on the whole, to dig them up, and pit them the usual way; but, for private families, it is better to make several small heaps than one long pit, because, when once open, and the air let in, the skins become hard instead of tender. It is the better way to let the heaps be about a bushel each, and mix up the soil with the Potatoes, to exclude the air; heap them up like a cone, cover with three or four inches of straw, and three inches of earth over that.

It will be found that, on opening one of these heaps, the Potato is white-skinned, like a new Potato, tender, of good flavour, and calculated to deceive any body but those in the secret ; for no new Potato looks so well, or cuts so well. We have tried all the Potatoes worth the trouble, but found none to answer like Chapman's Early Kidney. The ground is dug in the usual way, with or without dressing, according to the state of it. The Potatoes should be planted in drills, and not be dibbled in. Let them be planted about the middle of the month, and, as the weather may be very hot and dry, they must, in such event, be watered once or twice, by soaking the whole ground, as it would be soaked with rain; they must also be earthed up well when they require it. About the middle or end of October, according to the setting in of frosts, they should be dug up, or otherwise the haulm all covered over, to preserve from frost, and to dig up as they are wanted. The season for planting Potatoes has been the subject of discussion, but theory and practice both decide in favour of early planting, for reasons already given. The only thing to avoid is shallow planting, which is not safe. Many adopt autumn planting, and on some land it is as good and as safe as spring ; but all we contend for is, that the Potato should be in the ground before vegetation commences, or even before the eye materially swells. The first movement towards vegetation should be in the ground itself ; for, if not, the strength of the tuber is wasting ; but if the tubers be preserved from starting, no matter how long, they cannot be wrong. The difficulty of keeping the Potato from growing until July is very great. By exposure to the air, constant turning or removing them, on the surface of the ground, they will become quite green and unsightly, but they are all the better for the purposes of seed. With regard to preserving Potatoes for eating, there can be no question but they are better for not growing at all ; and wherever they are allowed to lie in heaps, so as to sweat and grow, the quality is greatly deteriorated ; on this account we prefer dry floors, even for the store Potatoes ; or if, from the large quantity, they are obliged to be pitted, they ought to be released from their pits before they begin to grow; whereas, in most cases, they are allowed to remain till they have grown to excess, and present one mass of stalks between all the tubers. These have to be rubbed off before the Potatoes are marketable; whereas, if they were released before they began to grow, they might be preserved a considerable time by only exposure to the air, and keeping dry. The great variety of Potatoes at present in cultivation, and which is annually receiving great additions, render a classification impossible, and the mention of any particular sorts would be unjust to some equally good; but there can be no difficulty in procuring the best from respectable houses ; and, we respectfully urge, that they be bought at this time of year, in preference to the spring, and that they be not allowed to vegetate before they are in the ground.



BERBERIS ACTINACANTHA.

(Martius.)

THE RAY-SPINED BERBERRY.

One of the smaller growing species of Berberry, forming a small sub-evergreen shrub, of about three or four feet in height, and flowering profusely in the months of April, May, and June. The branches a good deal resemble those of a gooseberry bush, in consequence of being furnished with "rayed" spines. The leaves are roundish ovate, varying to ovate, and even sub-cordate ; they have a hard, dry, curled appearance, as if the plant were accustomed to a rigorous climate. The flowers are small, very numerous, deep yellow, and sweet scented.

The plant is common in the neighbourhood of Valparaiso, in Chili, inhabiting the first range the Cordilleras.

It grows freely in a border of peat earth, such as is provided for American plants; or in light loamy soil ; or, from its habit, it is quite appropriate when planted on rockwork, where it grows readily in sandy loam. It is increased by seeds, or by layers. In mild winters it retains its leaves, but these are destroyed by severe frosts.

In some of the London nurseries the plant is known as Mahonia Knightii.

THE CRATÆGUS, OR THE THORNS.

Of all the smaller growing trees—half tree, half shrub—there is no extensive family at all approaching the Thorns, either in the number of objects of individual beauty, or in the picturesque variety displayed in their mode of growth ; so varied, indeed, are the characters they assume, that, as far as regards outline, perhaps all the familiar shapes and figures we are used to see are to be found in this one family. Most of the species are handsome at two distinct periods of the year, that is, when in blossom in the spring, and when in fruit in the autumn. Who is not charmed with the simple beauty of the "May," blooming, as it does, the harbinger of summer ? Who is not gratified by its peculiar fragrance, when inhaled with all the freshness of a spring-tide morning ? Who is not pleased, again, to see the countless "haws" upon the hawthorn boughs, rivalling even the berries, of the holly in their crimson hue, and decking the leafless branches with all the pride of plenty? Surely none! all, even the most superficial observers, share in the general satisfaction. But these are popular feelings, incited, perhaps, by some mighty inward principle, but still inexplicable. The eye of "taste" is, however, equally captivated by less glaring and prominent, though equally characteristic features to be found among the "Thorns ;" the varied outline and aspect of the different kinds ; the many forms and figures to be found among their foliage ; the charming colour of the flowers of some ; the different tints of their fruit—these and such characters are sufficient to elicit the approbation of those who look deeper than the surface of things.

Enumerating the estimable qualities of the Cratægus, the late Mr. Loudon observes, "Whether as small trees or as shrubs, they are all admirably adapted for planting grounds of limited extent, and especially for small gardens in the neighbourhood of large towns. They are not only highly beautiful when in flower (a period which extends from the beginning of April to the end of July, commencing with C. purpurea, and ending with C. cordata), but also when they are covered with ripe fruit, which includes a period commencing with C. purpurea and C. nigra, in the beginning of July, and continuing till the following spring and summer ; C. mexicana, C. virginica, and some other species, retaining their fruit all the winter. Of all the genera of hardy deciduous ligneous plants in cultivation in British gardens, there is not one which, taking it altogether, can be compared with the genus Cratægus."

The species of Cratægus are naturally extensively distributed; some of them are found in Asia and the north of Africa; but the greater number in Europe and North America. In this country, several collections have been formed of greater or less extent, but that of Messrs. Loddiges, the eminent nurserymen, at Hackney, and that in the garden of the Horticultural Society of London, may be taken as the most complete.

The Cratægus family grows well in most soils and situations, at least sufficiently so to secure all that is required of small or ornamental trees. It however, of course, grows best on soils the most suited to its nature, and in circumstances the most favourable to its existence: these are, a free open soil, of moderate depth, in a situation tolerably dry, as far as regards the drainage of the subsoil. On the other hand, any soil or situation where the fundamental points of preparation and management are at all attended to, will be found to admit of a far from incomplete measure of success. Those situations only in which the drainage of the soil is totally unprovided for, either by nature or art, can be considered as being altogether unfit for these plants.

The species, as far at least as we intend considering them, are what are termed deciduous plants; that is, they shed the whole of their leaves annually. In habit, they admit of being grown under two characters; either as small trees having a stem, or as bushes or shrubs, without any visible or obvious stem elevating the branches from the soil, but furnished more or less densely with branches quite down to the earth: these two characters may be applied almost indiscriminately to nearly all the kinds, and present the means of increasing the variety of character and appearance, so well provided for even in their natural forms of growth. Individually, our own taste would lead us to prefer the majority of them when furnished with a clean stem for a short distance from the ground, as we think then the graceful outline almost invariably assumed by the head of branches is displayed to much greater advantage. However, as we before remarked, in a collection, some of both forms should be adopted, for the sake of increasing, as far as such little points of attention can do, the variety which they may be made to display.

All the kinds flower abundantly, and produce their seeds freely enough in the neighbourhood of London; and by means of these they may be propagated, when such a course is thought desirable. It is, however, more usual to graft or bud the different kinds on the common white hawthorn, which is a free-growing plant, and is always abundant, and therefore well adapted for this purpose; and they all thrive so freely when worked in this manner, and display their individual and natural characteristics so fully, that we see no ground of objection to this mode of propagation, since it does not affect their habit, as it does that of some other plants. A decided advantage is sometimes realized, in consequence of being able to select strong and well-established stocks; for by this means much larger plants are attained within a given space of time, than by any other method of propagation which would dispense altogether with this extraneous aid. Of the operation itself, it is only necessary to say, that they are grafted or budded in the ordinary way upon stocks previously prepared, and cultivated, so as to be furnished with an abundance of fibrous roots: they are either worked near the ground, and the young shoot trained up to a sufficient height, and then pruned so as to form the head; or the stock is trained with a straight stem to a sufficient height, and then worked: the ultimate result in either case is the same; though the latter is the most expeditious method of forming the head. For dwarf and bushy plants the training to form a leading stem is dispensed with, and the young shoots pruned back a little for a season or two, after which they should in all cases be allowed to assume their own peculiar way of growth, except some other definite object be in view. In cases where any branch may grow out in an awkward and straggling manner, it is so far desirable to apply the pruning knife as to remove this objectionable tendency, but nothing more. Whether intended for dwarf bushy plants, or for standard ones, the young shoots, produced direct from the graft, must be pruned back for one or two seasons, in order to form the head of the plants sufficiently thick of branches: at this stage, any badly placed or cross shoots ought to be cut out altogether, and the rest shortened back about half their length; this treatment may be repeated the next season; and again, less rigorously in the following one, and it will seldom happen that much subsequent pruning will be needed. This work belongs properly to nursery culture. In most cases, it will be by far the easiest plan to procure young plants from the nurseries, instead of attending to these operations personally; especially as the plants are generally by no means expensive ones.

Where it is judged desirable to raise young plants from seeds, the berries should be procured in the autumn, and, after being mixed up with a considerable bulk of sand, they should be thrown into a heap, to remain one entire year; after this, they may be sown on prepared and well pulverized ground, covering them to the depth of half an inch. The seedling plants should be transplanted either after the first or second year's growth, as may be convenient; and subsequently as often as it can be attended to, until they are planted in the situations they are intended permanently to occupy.

In giving a descriptive list of the principal kinds of Cratægus, we shall arrange them in sections, in the hope of rendering somewhat easy of comprehension the principle of botanical classification.

DESCRIPTIVE LIST OF CRATÆGUS.

§ I. Microcarpæ; *or, those species which agree in general characters with Cratægus microcarpa.*

Leaves, lobed, or angulated, and shining. *Spines*, middle-sized. *Fruit*, very small, red, and remarkably late.

C. Microcarpa, Lindley. (The small-fruited Thorn.)—This is a native of the upper districts of Georgia and Carolina, growing to a small tree, from 8 ft. to 12 ft. in height, producing its small white flowers in medium sized bunches during May and June, and ripening its small red fruit in October. The plant is of rather slow growth; the habit is spreading and rather pendulous, and it is one of the latest in coming into leaf. The leaves are handsome, smooth and shining, oblong-spathulate, bluntly three lobed; and are usually produced in clusters. The fruit are usually produced abundantly on the tree, but being small, though of a bright red colour, they do not make much show. This is also called C. spathulata, and C. florida.

C. Cordata, Miller. (The heart-shaped-leaved Thorn.)—A native of hedges and rocky places from Canada to Virginia. It is a compact, close-headed small tree, of erect habit, growing from 15 ft. to 25 ft. high, and bearing numerous large terminal corymbs of small white flowers. The leaves are shining, deep green, cordate-ovate, with angular lobes; the size of the leaves varies greatly according to soil and other circumstances. The fruit are small, scarlet. It is one of the latest, flowering in June. It is called also C. acerifolia, C. populifolia, and C. Phænopyrum.

§ II. Oxyacanthæ; *or, those species which agree in general characters with the common hawthorn, Cratægus Oxyacantha.*

Div. 1. *Leaves*, laciniate. *Spines*, small. *Fruit*, middle sized, and mostly containing but one seed.

C. Oxyacantha. Linnæus. (The common Hawthorn.)—This is the common well-known hedge plant; it forms a round-headed tree, with obovate, deeply cut leaves, and fragrant white flowers, succeeded by red fruit; the varieties are numerous; some of the most distinct are here enumerated:—

C. Oxyacantha flexuosa, Smith.—A distinct variety, with a spreading habit, and having the smaller branches twisted in a curious zig-zag manner.

C. Oxyacantha præcox, of gardens. This is the Glastonbury Thorn, so famous for its earliness of flowering, which constitutes its chief difference. It comes into leaf in January or February, and sometimes, in mild seasons, even in December.

C. Oxyacantha eriocarpa, Lindley.—A robust growing tree, with spreading habit, and large leaves; it is very prolific in flowers, and the red fruit are woolly in the young state: it is one of the latest in coming into leaf. A very distinct variety.

C. Oxyacantha capitata, Smith.—This differs from the species chiefly in having a more fastigiate habit, and in producing its flowers in close heads at the extremity of the branches: the habit is erect.

C. Oxyacantha monogyna, Lindley.—This is a native of Siberia, with a dwarf and spreading habit, red fruit, and comes very early into leaf; in mild seasons it frequently flowers in January. It is also called C. Oxyacantha sibirica, C. sibirica, and C. eriocarpa monogyna.

C. Oxyacantha flava, of gardens.—A very distinct variety, which ought never to be omitted in collections. The fruit are roundish, and of a golden yellow, hanging on the tree all the winter, and are remarkably sweet; the habit is dwarf and spreading. Called also C. Oxyacantha aurea.

C. Oxyacantha flore-pleno, of gardens.—The flowers are white and double, and on some soils die off a pinkish or reddish colour. The habit is compact. Also known as C. Oxyacantha multiplex, and C. oxyacanthoides flore-pleno. This is a very beautiful kind.

C. Oxyacantha obtusata, De Candolle.—This has rather a spreading habit, and is probably the single variety of the preceding. The leaves are small, flat, and shining. It is also sometimes named C. oxyacanthoides lucida, and C. lucida.

C. Oxyacantha Celsiana, of gardens.—A slender fastigiate growing variety.

C. Oxyacantha foliis aureis, Loddiges.—Has variegated leaves: when first unfolding in the spring they are showy, but afterwards look ragged and diseased.

C. Oxyacantha foliis argenteis, of gardens.—Has the leaves variegated with white.

C. Oxyacantha quercifolia, Booth.—A robust grower: the habit erect, and the fruit red. Called also C. Oxyacantha transylvanica.

C. Oxyacantha laciniata, Loddiges.—The habit of this variety is slender, somewhat pendulous; the fruit are red; it is one of earliest in leafing. It is also called C. laciniata, and C. pteridifolia.

C. Oxyacantha pendula, Loddiges.—This has drooping branches, and forms a very elegant tree. It is early in leaf, and has red fruit. C. Oxyacantha reginæ, or Queen Mary's Thorn, is the same, or very similar.

C. Oxyacantha stricta, Loddiges.—A very marked and distinct variety of a fastigiate habit, resembling the Lombardy Poplar. The fruit are red. It is also called C. Oxyacantha rigida.

C. Oxyacantha rosea, of gardens.—This is the well-known, and universally admired, old-fashioned "Pink May." It is also called C. Oxyacantha rubra, and the Scarlet Thorn.

C. Oxyacantha punicea, Loddiges.—Differs from the last in having darker and richer coloured flowers. It is also called C. elegans, and C. Oxyacantha rosea superba.

C. Oxyacantha rosea flore-pleno, of gardens.—A double flowered variety, of the same colour as the last, and, perhaps, may be regarded the most beautiful when in blossom of all the Thorns.

C. Oxyacantha melanocarpa, Fischer.—A robust and spreading tree, bearing black fruit. It is also called C. fissa, C. Oxyacantha platyphylla, C. platyphylla, C. incisa, and C. Oxyacantha incisa.

C. Oxyacantha oxyphylla.—A very handsome and distinct variety, found in a bed of seedlings, at Somerford Hall. The leaves are small, the habit very slender, diffuse, and somewhat pendulous. It is one of the most graceful and handsome kinds.

There are many other seedling variations, almost without number.

C. Douglasii, Lindley. (Douglas's Thorn.)—A native of North America: it is of erect habit, and very late in coming into leaf, and grows from 10 ft. to 15 ft. high. The leaves are obovate, with saw-like edges, shining; in autumn they become leathery, and acquire a purplish cast. The flowers are white, borne in medium sized bunches in May, and are succeeded by the small dark purple fruit, which drop off soon after they become ripe. The spines vary considerably in length. Is is the same as C. punctata brevispina.

C. apiifolia, Michaux. (The parsley-leaved Thorn.)—From the moist woods of Virginia and Carolina. The habit is weak and straggling; it is rather pendulous, growing from 10 ft. to 20 ft. high. The leaves are deltoid, cut into deep lobes. The flowers are medium sized, white, and are produced in small bunches in May and June. The fruit are scarlet.

C. apiifolia minor, Arb. Britt.—Differs from the last in being altogether smaller. It forms a most ornamental low bush, and when grafted, or budded standard high, produces a beautiful pendent small tree.

Div. 2. *Leaves*, lobed or laciniated. *Spineless. Fruit*, small.

C. heterophylla, Flugge. (The various leaved Thorn.)—A handsome fastigiate or pyramidal, dense-headed tree, from 10 ft. to 20 ft. high. The leaves are usually lanceolate-cuneate, three cleft at the apex, but assume many other forms: they are, as well as the flowers, produced early in the spring, and together with the fruit remain on the trees till very late in the autumn. The flowers are large, produced in May, very abundantly, but not in very large bunches. The fruit are of a rich crimson, narrower and longer than that of the common haw. It is also called C. neapolitana.

C. nigra, Waldstein. (The black-fruited Thorn.)—A native of Hungary. It forms a rather large handsome tree, of somewhat fastigiate habit, growing from 20 ft. to 30 ft. high, and coming into leaf, in mild seasons, in February or March. When growing on its own roots it throws up a great number of suckers. The leaves are somewhat wedge-shaped, and sinuately lobed, whitish beneath. The flowers are white, small, produced in April or May, and borne only two or three in a bunch. The fruit are black. It is called also C. carpatica.

C. purpurea, Bosc. (The purple branched Thorn.)—An upright, rigid, rather slow growing tree, reaching about 10 ft. in height, without thorns, and having a few small branches, not densely clothed with leaves. It is from the Altaic mountains. The flowers are small, white, produced in bunches of medium size; it is interesting on account of its early flowering season, which is the beginning of April, it being the first to come into bloom, in the neighbourhood of London, after the Glastonbury Thorn. The fruit are small, round, and usually dark purple. It is sometimes called C. sanguinea. C. altaica is a mere variety.

C. Oliveriana, Bosc. (Oliver's Thorn.)—A distinct kind, with a spreading, rather straggling habit. The leaves are small, and pubescent, or downy; the flowers are white, in moderate sized bunches; the fruit are small, nearly black. It is called also C. olivæfolia, C. Oliveria, C. orientalis of Loddiges, and C. Oxyacantha Oliveriana.

§ III. Aroniæ; *or, those species which agree in general characters with Cratægus Aronia.*

Div. 1. *Leaves*, incised, and pubescent. *Spineless. Fruit*, very large, red or yellow.

C. Aronia, Bosc. (The Aronia Thorn.)—A native of Greece and the Levant. It forms a thick and erect-growing small tree, from

15 ft. to 20 ft. high, and is remarkable for its large yellow fruit, which are not bad eating. It comes early into leaf, and opens its medium sized white flowers about the end of May, three or four only being borne together in a bunch. The leaves are deeply cut. It is also called C. fissa.

C. TANACETIFOLIA, Persoon. (The tansy-leaved Thorn.)—A native of the East. A robust growing fastigiate tree, with upright rigid branches, not unfrequently terminating in indurated or thorny points. The leaves are much and deeply cut or divided. The flowers are large, white, in few flowered bunches, produced in May and June, and are succeeded by globular yellowish-green fruit, which are among the largest of the genus. This species is one of the latest in coming into leaf. It is also called C. pinnata. There are two varieties cultivated.

C. tanacetifolia glabra, Loddiges.—A hybrid between C. tanacetifolia and C. Oxyacantha, introduced from Germany; it differs principally in having shining leaves, and reddish yellow fruit, about half the size of the species.

C. tanacetifolia Celsiana, Arb. Britt.—This variety somewhat resembles C. orientalis, but the leaves are larger, and the tree more robust and fastigiate. The flowers are white, produced in large dense bunches, in June: the fruit are large and yellow. It forms a splendid tree. Called also C. incisa, and C. tanacetifolia Leeana.

C. MAROCCANA, Persoon. (The Morocco Thorn.)—A native of Palestine on Mount Sinai, and of Morocco.—A handsome tree of more fastigiate growth than C. Azarolus, but in other respects resembling that species, except in being smaller in all its parts. The leaves are three lobed, produced very early, even in January if the season is mild, and retained very late. The flowers, in rather small bunches, are pure white, very fragrant, and produced in May and June. The fruit are yellowish red. One of the handsomest trees of the genus, growing 15 ft. or 25 ft. high.

C. AZAROLUS, Linnæus. (The Azarole Thorn.)—A native of woods and rough places in the south of France, and in Italy. The habit of this kind is strictly tree-like, growing from 15 ft. to 20 ft. high, and having a trunk more or less clothed with branches to within three or four feet of the ground. The branches are rather spreading, forming, however, for the most part, a tolerably round-headed tree; and they are furnished thickly with smaller twigs, or spray. The leaves are downy, three cleft, and wedge-shaped at the base. The flowers small, white, in small bunches, produced during May and June, and succeeded by large, round, scarlet fruit. There are six varieties known on the continent.

C. ORIENTALIS, Bosc. (The eastern Thorn.)—A native of the Levant. It forms a low spreading tree, from 15 ft. to 20 ft. high, with loose, rather pendulous, very hoary branches. The leaves are deeply cut, produced late in the season, as also are the large white flowers, which are borne in small bunches in May and June. The fruit are large and numerous, of a yellowish red, or coral colour, and are very agreeable to the taste; the profusion in which they are borne, and their brilliancy of colouring, render this tree very ornamental when in fruit. It is also called C. odoratissima, and C. tanacetifolia taurica.

C. orientalis sanguinea, Arb. Britt.—A variety of the last with purplish red fruit. It is a native of the countries bordering on the Black Sea. Also known as C. sanguinea, and C. orientalis of Lindley. It is one of the handsomest kinds.

Div. 2. *Leaves*, nearly entire, or lobed. *Spines*, few, and rather large. *Fruit*, large, yellow.

C. MEXICANA, Mocino. (The Mexican Thorn.)—A native of the table lands of Mexico. This species is evergreen when planted against a wall, and sub-evergreen in most situations when growing exposed in the climate of London. It is a vigorous grower, forming a low tree, 10 ft. to 15 ft. high, of rather a spreading habit. The leaves are oval-lanceolate. The flowers are large, white, produced in June, in large dense bunches, and succeeded by large pale green, or yellowish fruit, resembling a small apple, but hardly palatable. In sheltered situations, they remain on the trees with the leaves during the winter. It is known also as C. stipulacea, and C. Lambertiana.

§ IV. COCCINEÆ; *or, those species which agree in general characters with Cratægus coccinea.*

Div. 1. *Leaves*, lobed, large, serrated. *Spines*, large. *Fruit*, large, numerous.

C. COCCINEA, Linnæus. (The scarlet-fruited Thorn.)—A native of North America, from Canada to Carolina, in hedges and woods. It forms a small tree, growing about 20 ft. high. The general habit is rather fastigiate; but in some instances more or less spreading; in aged plants, the spines generally disappear. The leaves are cordate-ovate, with angular lobes. The large white flowers are produced in small bunches in May and June. The fruit are large, scarlet, and eatable. Like the common hawthorn, the seedling varieties are numerous; some of the most prominent of them are the following:—

C. coccinea maxima, Loddiges.—Has larger leaves than any other kind, and large red fruit: the habit is spreading. It is also called C. coccinea spinosa, and C. acerifolia.

C. coccinea corallina, Loddiges.—The leaves and entire plant are rather smaller than in the species; the habit more decidedly upright; the fruit smaller, and of a fine coral red. Called also C. corallina, and C. pyriformis.

C. GEORGICA, Douglas. (The Georgian Thorn.)—The habit is fastigiate, and rather slender; the leaves smaller and less lobed than in the preceding kind; the fruit are red. It is a very abundant flowerer, It is by some regarded as a variety of C. coccinea, and called C. coccinea indentata.

C. GLANDULOSA, Willdenow. (The glandular Thorn.)—A native of North America, found in Canada, and on the Alleghany mountains, and also on the Rocky mountains. It forms a low compact bushy-headed tree, from 12 ft. to 15 ft. high, of a somewhat conical habit, and of slow growth, which circumstance renders it well adapted for small gardens. The leaves are obovate, wedge-shaped at the base. The flowers are white, produced in smallish bunches, in May and June. The fruit are oval and scarlet. It is also called C. sanguinea, and C. rotundifolia. The cultivated varieties are:—

C. glandulosa succulenta, Fischer.—Has larger and more succulent fruit than the species.

C. glandulosa subvillosa, Fischer.—Has villous twisted leaves, and stunted tortuous branches. The habit is spreading, and the fruit red.

Div. 2. *Leaves* and *Spines* as in Div. 1. *Fruit*, small.

C. MACRACANTHA, Loddiges. (The long-spined Thorn.)—A native of North America, where it is the most common species. It forms a large open, spreading, vigorous growing tree, from 15 ft. to 30 ft. high; the shoots very diffuse, and tending upwards at an angle of about 45 deg. from the ground. The leaves are ovate-oblong. The flowers are small, white, produced in rather large bunches during May and June. The fruit are small, and of a shining red colour. It is also called C. spina longissima, and C. pyrifolia of Torrey. There is a variety with still smaller fruit, called C. macracantha minor.

Div. 3. *Leaves*, entire, or serrated. *Spineless*. *Fruit*, large, and punctated.

C. PUNCTATA, Aiton. (The dotted-fruited Thorn.)—A native of the woods and swamps of Virginia and Carolina, forming a small tree 15 ft. to 30 ft. high, with a spreading, nearly horizontal habit; and producing large white flowers, in small-sized bunches, in May and June. The leaves are obovate. The fruit are large, red, and usually dotted. There are four forms of this species cultivated:—

C. punctata rubra, Pursh.—The C. edulis; forms a spreading tree, bearing red fruit.

C. punctata aurea, Pursh.—Has large yellow fruit, and a spreading habit. Called also C. punctata flava, and C. dulcis.

C. punctata stricta, of gardens.—Has large red fruit, and a fastigiate or upright habit.

Div. 4. *Leaves, &c.* as in Div. 3. *Fruit*, small.

C. PYRIFOLIA, Aiton. (The pear-tree leaved Thorn.)—A native of woods and rocky places from Pennsylvania to Carolina. It forms a small tree, 20 ft. or upwards in height, of a spreading habit, and having the branches generally spineless, and also much twisted; hence in some foreign collections it is called C. flexuosa. The leaves are ovate-elliptical, deeply indented. The flowers are small, white, produced in June and July, in large bunches. The fruit are small and yellowish-red. The leaves of this tree are usually the largest among the Thorns, and they have the peculiarity of dropping early. It is also called C. leucophlæos, C. radiata, C. tomentosa, C. latifolia, and C. cornifolia.

§ V. CRUS-GALLI; *or, those species which agree in general characters with Cratægus Crus-galli.*

Leaves, entire, or serrated, and shining. *Spines*, large. *Fruit*, middle-sized.

C. CRUS-GALLI, Linnæus. (The cock's-spur Thorn.)—This is common in woods and hedges, as well as on the banks of rivers, from Canada to Carolina. In the south of England, and in sheltered situations, it is a sub-evergreen. It forms a low tree, with a spreading habit, growing from 15 ft. to 20 ft. high. The leaves are obovate wedge-shaped. The flowers are white, small, and borne in May and June, in good sized clusters; and are succeeded by small scarlet fruit. It is also called C. cuneifolia, C. lucida, and C. hyemalis. There are several varieties; the principal are:—

C. Crus-galli splendens, De Candolle.—Has the leaves obovate, and the fruit red. A splendid tree. Called also C. arbutifolia.

C. Crus-galli pyracanthifolia, De Candolle.—Forms a low, spreading, slender, flat-headed tree, resembling, even when in a young state, a miniature Cedar of Lebanon. The leaves are oblong, the upper part lanceolate, and the fruit yellowish green.

C. Crus-galli salicifolia, De Candolle.—In habit resembling the last. The leaves rather narrower, and fruit yellowish green. These two varieties are admirably adapted for miniature fancy trees.

C. Crus-galli ovalifolia, Lindley.—This is a native of North America. The habit is loose and spreading, and the branches very sparingly furnished with spines. The leaves are broad, oval. The flowers are large, white, in medium sized bunches. The fruit are red. It is also called C. elliptica.

C. Crus-galli prunifolia, Lindley.—A native of North America. The habit is compact, somewhat erect or fastigiate. The leaves ovate. The flowers small, white, in small bunches, during May and June. The fruit are red. It is also called C. caroliniana.

§ VI. PARVIFOLIÆ; *or, those species which agree in general characters with Cratægus parvifolia.*

Leaves, small, finely lobed or serrated. *Spines,* small, and not numerous. *Fruit,* small and hard.

C. PARVIFOLIA, Aiton. (The small leaved Thorn.)—A native of sandy shady woods, from New Jersey to Carolina. It is a low shrub, from 4 ft. to 6 ft. high, of dwarf rigid habit, with small oval lanceolate leaves, and flowers produced almost singly at the ends of the twigs, late in May and in June. The flowers are small and white. The fruit comparatively large, yellowish green. It has many other names, as C. viridis, C. florida, C. axillaris, C. uniflora, C. grossularifolia, and C. linearis; the different states of the plants which give rise to these several names being not unfrequently found on the same plant.

C. VIRGINICA, Loddiges. (The Virginian Thorn.)—A native of Virginia. A low shrub, only 4 ft. or 5 ft. high, with small obovate, cuneate leaves, and producing but few of its white flowers at the end of its shoots in May and June. The fruit are round and green. It resembles what is called C. spathulata.

C. FLAVA, Aiton. (The yellow-fruited Thorn.)—A native of North America, from Virginia to Carolina. A large, rapid growing, spreading tree, from 15 ft. to 20 ft. high, remarkable for its rough bark, and the horizontal tendency of its branches. The leaves are obovate, wedge-shaped. The flowers, mostly solitary, large and white, produced in May; the fruit are yellow, or yellowish green, and top shaped. It is also called C. caroliniana, and C. flavissima.

C. flava lobata.—Supposed to be a native of America. Much resembles the last, but bears its white flowers in loose corymbs in May. The fruit are green. It is called also, C. lutea, and C. lobata.

C. flava trilobata.—A hybrid, with spreading habit, resembling C. flava, but with branches less vigorous and more thorny. The leaves are ovate-cuneate. The flowers are produced in bunches of considerable size. The fruit are yellow, tinged with red. Called also C. spinosissima.

Besides those we have included in our arrangement, there is an evergreen species called C. Pyracantha. or the fiery Thorn, which is often seen growing against the fronts of dwelling-houses, and presenting a very beautiful appearance in consequence of its large dense masses of deep orange, or flame-coloured berries, intermixed with its dark green leaves. Its spreading, rather straggling habit renders it very suitable to be introduced for the purpose of training against the wall of a house, or other building; when planted otherwise it forms a handsome evergreen bush, from 4 ft. to 6 ft. in height; and if grafted standard high, it will form a most desirable evergreen low tree. In either situation it is perfectly hardy.

PRACTICAL GARDENING.

OPERATIONS FOR DECEMBER.

THERE is hardly any month in the year in which the garden looks so deplorable as in December, unless the proper steps are taken to prevent it; and this is too often neglected for want of excitement. To the superficial gardener, the charms of the place are gone as soon as a severe frost cuts off all the flowers and leaves of the annuals and deciduous plants. Shooting, fishing, and fifty other things in season, engage his attention. He cares nothing more until sunny days and opening spring-flowers remind him of spring, and of dressing up his garden. Such a person must not be called even an amateur gardener. There is no good reason why the garden should not be as neat and as clean in winter as in summer; hence the necessity of raking off all fallen leaves from every part of an establishment, and getting them together in a heap, where they may rot into mould, or be used to ferment in a hot-bed or pit. Again, the decaying vegetation of all kinds should be removed; the remains of crops that are done with; the stems and half decayed leaves of flowers that have left off blooming, and all other useless subjects, should be removed. All sticks, and other supports of flowers or vegetables, should be collected and placed where they may be saved till they are wanted again, or burned. Whatever ground is idle, should nevertheless be clean and neat, and either left in ridges or rough dug, to take the benefit of any frost that may occur during the winter months, or until the place is required for seeds, or flowers, or plants, to fill it up. The paths of the kitchen garden, and the walks and roads in the flower garden and shrubbery, should be rolled with heavy rollers, as frequently as convenient, all the time the weather remains damp; and especially after every frost, which will always be found to disturb the surface and make it rotten. Wherever there are trees in the way, take them up, or throw them, and cut them into lengths suitable to be used for fences, posts, bean and pea sticks, or fire-wood, as the case may be; and where any of the timber trees about the premises require to lose any of their limbs, now is the time to cut them off. In very sloppy weather, avoid all operations that require you to tread on the beds or borders, for it does immense mischief. It is better to lay by a few days than to trample on the soil in wet weather; and there can always be found plenty of work under cover, in any establishment of the least pretension, in the making of labels, examining, drying, and thrashing out seeds, shifting some of the potted plants, cleaning out houses and pits, and looking through all the fruit, to see that the bruised or decaying ones are used first, or, if bad, thrown away. Look well also to all hedges and fences; the former must be put to rights by plashing and bending the branches, so as to close particular openings and gaps; and when this cannot be done, plants must be put in, and stakes to protect them until large enough to fill up the place. Fences should be repaired the instant there is anything wrong; a vacancy is always tempting, because other portions are so easily removed. There is nothing more important than keeping all hedges, ditches, and fences in high order. These remarks apply to every portion of an establishment, whether it be garden, farm, paddock, or shrubbery. Attend also to all water-courses, cleaning them out, and securing the proper declination for the running off. If there be any part of the ground not properly drained, no time should be lost in doing it; for the cost will be well laid out, if you have any time to bring back the outlay by future crops, or better success among flowers. According to your tenour, so make your drains temporary or permanent; but drained the garden ought to be, under any circumstances. We now proceed to particular departments.

THE FLOWER GARDEN.

Bulbs.—We are to presume that bulbs of all kinds were planted last month, and that nothing of the kind remains out of ground; if there be any, there is no time to be lost; and they have already taken serious mischief by exhausting themselves ever since they began to swell at the roots. Tulips are generally planted during the first three weeks of November, even by those remarkable for procrastination; yet accident will sometimes prevent people from doing as they would: it only, then, remains for them to do as they can. They should, in all such cases of delay, be planted shallower than they would have been at the proper season; and by having less distance to grow, they sometimes surprise one with their bloom, though it is a desperate experiment to keep them out so long. Lose not an instant, therefore, in getting into the ground all the bulbs that have been neglected.

Beds and Borders.—All the decayed annuals having been removed, and the perennials for the most part cut down, the next question is, what is to be done with the empty beds, clumps, and borders? Even where bulbs and spring-flowers are planted, there is nothing to show, and bare surface of mould looks bad and unfinished. It has been recommended by Mr. Beaton, who passes for an experienced gardener, and who has been employed on one of the garden newspapers, that branches of evergreens should be cut from the shrubs and trees, and be trimmed up into the form of dwarf plants, and stuck into the ground all over the beds; and this advice was actually promulgated by a Gardening journal, as directions for the management of a garden in winter! Of course very few attempted to do so ridiculous a thing, although Mr. Beaton assured the public, that these branches, when stuck in the ground, would keep their colour all the winter. Here and there an inexperienced person tried the experiment; but, besides being exposed to the ridicule of his neighbours, the evergreens turned colour and shrivelled soon after they were put into the ground, and were necessarily removed after all the trouble had been taken. In a Garden Practice, published in 1843, there was a more rational, and very much more popular, recommendation for the management of flower beds and borders in winter. It was to plant or plunge dwarf evergreens of different kinds to fill up all the conspicuous vacancies left by the removal or decay of the summer beauties; and none but those who have adopted the plan can form an idea of the advantage of it. Potted plants of the Cedars, Arbor Vitæs, hardy Heaths, Box, Laurestinus, Aucuba, Berberis, Holly, and many other subjects, can be raised or purchased cheaply enough, and they are beautifully ornamental where flowers have been and will be again. In beds and clumps where the bulbs are planted, there is abundant room for small bushy pot-plants of evergreens; and the different colour and habit of the foliage and plant makes sufficient diversity to give great interest to the planting; they will be found ornamental, and greatly improving to the scene, even after the flowers are coming up between them; but they may always be removed at the shortest notice, and rebedded out, or kept in their pots for another season. When the beds, clumps, or borders, are entirely for the annuals and other summer flowers, it is better to let the evergreens remain until the summer subjects are forward enough to be interesting of themselves. In a geometrical garden, to be entirely made up for the winter with evergreens, the different clumps should be planted with only one kind of evergreen, precisely after the same fashion as in the summer time they are with flowers. Thus, if three of the clumps, at equal distances, would have one sort of flower, let them during the winter have one sort of plant. However, there is plenty of room for the exercise of taste on the part of the gardener ; all we need say here is, that such planting puts on a cheerfulness in winter time, and will repay the labour and cost in any respectable establishment. By keeping the evergreens in pots, they naturally continue stunted, and this disposition should be promoted by occasional checks with the knife. When the pots are taken up, in the spring, they should be bedded out again very close in some spare part of the garden, and young ones should be raised from seed, cuttings, or layers, to succeed these as they become too large. When they have grown out of size for winter planting in the flower garden, they may be planted about the premises, where they may be useful and ornamental. Whatever general planting, alterations, improvements, gravel walk making, box-edging, turfing, &c., be not done, should be done without delay. The danger of a frost, which might close up all kinds of work for weeks, should always be kept in mind ; for a few weeks' frost at this time throws neglected work so far into the spring, as to be a serious drawback to its success. Advantage should be taken of every kind of plant that produces flowers in winter, and the main borders should always be well filled with such subjects. Perpetual and China Roses, unless actually stopped by hard frost, will frequently give bloom nearly through the winter, especially the China Roses. The Pyrus japonica, when once reconciled to its situation, and doing well, will show bloom all through the winter, and a few fine days will always bring out enough to make them interesting. A great diversity of flowers in the main borders will always give us something in mild weather ; and there are some very pretty subjects that nothing but frost will stop from flowering. Pansies, for instance, will bloom in a few days of fine weather, even in the depth of the winter. Wall-flowers, that lay forward, begin to throw a few blooms in autumn; and, out of a quantity, some are sure to be blooming, if a few days' fine weather help them. Then we have some of the Hellebores, Winter Aconites, the Amaryllis lutea (so called at the nurseries), and the autumnal Crocuses, which, if planted in judicious quantities and places, will, in mild winters, help the beauty of a garden very much. The borders should be now well looked to ; all decayed stems, and dead leaves and flowers, removed ; suckers removed from Roses and Pyrus japonica, branches (of shrubs) which are growing too vigorously should be checked, to throw strength into the general growth. Rake all the surface clean, and when you cut down and remove the perennials that die to the roots, place labels with names to them, written plainly, and let the labels be of a size too large to be trodden in, or raked off.

Pinks and Pansies in beds should be examined after every frost; for it will be found very often that the ground has been completely disturbed and made like a sponge ; and sometimes the roots half exposed: they require to be pressed down into their places, and the beds smoothed again. But if there has been proper litter thrown over the beds at the proper time, they will not have been disturbed at all. A few inches thickness of well-saved Peas-haulm loosely laid on the top of Pink and Pansy beds, saves them from a very hard frost ; and although they may be called very hardy subjects, their tender age renders them liable to be injured by alternations of frost and thaw. If among the Pansies any are throwing out blooms, you have to consider whether you want them or not ; and if not, it will strengthen the plants to pick off every bud as it comes. If, however, they are in clumps, borders, or ornamental portions of the garden, let them bloom as much as they like. Seedlings in pans must be protected; very young plants of the most hardy things cannot stand frost, wind, and wet, like those matured. Pinks and Pansies in pots should be in frames, kept pretty dry, and though they should have as much air as possible, they must not have it with north-east winds, nor in very wet, nor very cold weather ; when it is mild the lights may be taken off altogether, but when boisterous, or wet, or cold, they are better nearly closed. They should be kept pretty dry too, for watering is never good when things are not growing. If Pansies and Pinks are intended to be grown in pots, they should be removed into size twenty-four, with good rich compost of loam, leaf mould, and cow-dung mould, in equal parts ; or, if the loam be that from rotted turfs, the decayed turfs will be of themselves leaf mould, so that two-thirds of this rotted turf and one-third cow-dung mould will be good. In these pots, if the weather continue mild, they will grow rapidly, and if not mild, they must be kept moderately warm ; they will be making strength until blooming time.

Auriculas.—These beautiful plants are showing the probable strength of their blooms, so that they can be selected with something like certainty ; and those who value strong plants, or wish to make a selection, should not drive it off longer. Select those which, when laid hold of and tried, are firm in the pot; for, unless they are well established now, they will not recover in time to make a good bloom. The Auriculas only require to be kept moderately dry, to have their decayed leaves removed, and to have as much air as possible in mild weather. The bottom of the pit or frame ought to be occasionally cleared out. In a mild day it does good to examine the drainage of every pot, to remove all out, and brush the bottom and sides of the pit or frame well; for it disturbs whatever plagues there may be in the way of snails, slugs, wood-lice, the larvæ of moths and butterflies, and many other pests; rub the pots dry, and cleanse the outsides and bottoms from any dirt, worm casts, &c., that may adhere to them; replace them all as before; look well to the glasses and lights, to see there is no drip; for that will soon kill the strongest plants.

Beds and Patches of early Tulips, Hyacinths, Narcissus, Jonquills, and other flowering bulbs, require protection if the weather be very hard; and the correct way of doing this, is to put Peas-haulm on the beds, and inverted flower-pots over the patches. If, however, these are not at hand, small heaps of tan will be of use on the patches; and for beds, perhaps, the most easy and effective plan, is to put willow sticks, bent from one side to the other of the beds, and crossed by straight ones from end to end, and throw garden mats or cloths over them.

Tulips should be protected from frost, if they are for exhibition, or they are choice; for, as we have before remarked, they are very susceptible of damage, though scarcely any degree of frost will actually kill them. We believe that one-half of the flushed and foul blossoms may be attributed to frost reaching the incipient petals, and this is commonly the case in hard seasons. We now speak of the Tulip before it rises above ground, but the forwarder it is the easier it is damaged; and the result of such damage, is blighted, split, distorted, and discoloured petals. If the bulbs have been planted early, and the autumn is very mild, there will be found many peering above the ground by the end of the month, and the old fanciers commonly cover them up with a little cone of sand to protect them against frost. The hardiness of the Tulip,—its known apparent indifference to frost,—leads many to pay no kind of attention even to their best beds until they are above ground; nor does one person in a hundred, when regretting blighted buds and defaced flowers, for a moment consider that they are the result of carelessness, at a period when he thinks they require no attention. It is quite certain that the less they are covered the better they are; but covering is a choice of evils; it does less harm than frost.

Anemones and Ranunculuses which are autumn planted, require protection, at least so much as to prevent frost from injuring them; and Anemones that are in the ground for two or three seasons will be actually blooming between the frosts; but the flowers that are out, are cut off every time the frost touches them. Light litter is the least hurtful to them, and protects them best; only it should be removed always in mild weather. The beds for those Ranunculuses and Anemones that are to be planted in February, for show in June, should be dug out at leisure, and the soil thrown on each side in two ridges, that it may have the benefit of the frost and of being occasionally turned over.

Carnations and Picotees, some of which are too often left on their stools to this late period, should be potted as before directed, without a day's loss of time; and, as it is necessary to get them established, they should be shut up close in their frame or pit, after potting, for a few days; and by no means be allowed to have high wind, or wet, for some time. Indeed, the dryer they are kept after potting the better; yet they must be watered a little at the potting, to close the earth about their roots. Those which were potted in proper time must have all the air that can be given; and be entirely exposed all through the mild and dry weather.

Shrubs and Trees newly planted must be occasionally examined, to see that they have not been disturbed by wind, and when they are found to have been so, they may have stakes placed to them, or the stakes already placed must be made fast.

Gather composts, of all descriptions, likely to be wanted for potting plants, and turn over heaps already collected, first, to sweeten them, and give them the benefit of frosts; and secondly, to pick out and destroy the wire-worm, grub, and other insects likely to be injurious. Gather together for the dung-heap, or to rot by itself, all the garden waste, such as weeds, stalks, leaves, the rakings of beds and borders. Nothing should be thrown away, though it is not at all uncustomary to see the garden waste thrown outside a back gate, to be eaten by cattle, or picked up by those who know better than to waste it. Every leaf returned to the earth provides so much nourishing food for plants. Many other subjects appertaining to the flower garden will be mentioned in the different departments to which they are consigned for the winter.

Roses may yet be planted in open weather, and that, too, without having suffered, or being likely to suffer; only in all planting, be careful of the principal points laid down as to removal, preservation of the roots, reducing the heads, &c.

Planting Flowering Shrubs generally may be regarded as a thing postponed; for, if there be no frosts, and not too much wet, they will not be materially worse, though too much cannot be said in favour of doing everything as soon as it can be done, for there is no calculating on seasons.

Read the whole twelve months' directions, and make notes of duties neglected, so that such things as may yet be remedied, be attended to forthwith; and that it may be the better impressed on the memory for future years, if neglected now. Many operations, though directed for particular months, may nevertheless be done at many different periods.

STOVE AND ORCHIDEOUS HOUSE.

The attention required here is so like that for the last month, that we ought to repeat the directions, or to refer to them; but as the stove is used for forcing, and many persons begin this month only, it may be well to say that all potted plants for forcing should be removed into the coolest part first, and then be removed to the warmest. Almost every flower in cultivation may be forced, but there are few who take sufficient pains. With Roses, the same identical plants ought to be forced year after year; for the earlier they are brought forward one year, the more easily are they brought forward the next. Roses will not force well the first season; they may give a few blooms, and do well enough for a London market, but as objects of interest they are nothing. All that can be done is to get strong plants, well established in pots, and with wood well ripened, to bring them into the green-house first, then to the coolest part of the stove, and here keep them clear of the green-fly, which is almost a certain visitor at some period of its growth. In such case, nothing but fumigation with tobacco smoke, and syringing with plain water afterwards, will effectually clean them. All the plants now forcing want a good supply of water, and especially those that have begun to progress towards flowering; for the heat soon exhausts the moisture, to say nothing of the more than ordinary supply that a plant swelling for bloom requires. Stove and orchideous plants must be treated in every respect as last month. Seedlings that are outgrowing their small pots, or seed pans, may be transferred to proper sized pots.

PITS AND FRAMES.

These structures are to be managed precisely the same as the respective houses for which they are substitutes. The cold-pits, which answer the purposes of the green-house, are to be kept clean, and in all mild weather as open as possible, as the plants cannot have too much air. Warm pits, for stove plants, must be kept at the same temperature as the stove, and equal care be taken to keep the plants clean and healthy, by extirpating any of the usual plagues the instant they appear. All the plants of a hardy, or half-hardy description, that are in frames and cold-pits, must be kept from any excess of water. In all respects, these, as well as other houses and buildings, must be managed the same as last month.

THE GREEN-HOUSE.

The principal evil with which green-house plants have to contend in winter is the damp; it is, if allowed to prevail long, more fatal than cold; the next evil is the frost; the last is heat. Damp will affect to destruction many subjects that would only be a little damaged by frost; and the mischief that would arise from heat is great. To prevent damp, it is necessary, however, to light fires, even in mild weather; and the best way to dry the house is to make fires on a fine dry day, and let the top glasses be pulled down a little, to allow the damp to evaporate. Plants in the green-house should not be watered too often; they require only to be kept from actually drying up; for very little moisture is sufficient to keep a plant that is not growing from dying. The pots should be frequently examined; and if the soil appears wet, while most others are dryer, you will find either that it has been receiving the drip from some faulty light, or that the drainage is stopped or retarded; in the former case, the pot may be laid on its side to dry a little; in the latter, it must be changed for a new pot. The house should be kept as open as possible in every part in dry mild weather, but if damp, it is better closed. If there be any likelihood of frost, let mats be hung up on the front glasses; they are almost as good as lighting a fire, but would not do to trust to altogether; still care should be taken not to overheat the house. When the fire is at its best, the heat should not be more than 40°, though we know it is one of the most difficult things in green-house culture to maintain a temperature well above a frost without getting it up too high; green-house plants suffer from any excess of heat in winter, and when it is most severe out of doors, it is the most difficult to preserve the even temperature within. Cleanliness is of the utmost importance to the plants; and, above all other things, though least of all attended to, plenty of room. By crowding plants close to each other on the shelves, they injure one another, and it is impossible they can grow handsome; or if handsome when put into the house, impossible to retain their beauty without abundance of space. It is the crowding of plants together that makes them lose the foliage from their lower branches, and causes them to grow tall, straggling, and bare at bottom. All the shelves and stands should be brushed dry, dead leaves and all kinds of litter removed, and the floors regularly swept. If the place under the shelves be the common earth, and all the surplus water from the pots go through and soak it, the damp will often be found troublesome; mildew will attack many of the delicate plants, and there is too much reason to fear they will scarcely ever recover their proper health. Beyond keeping the house dry, the plants clean, and the frost away, there is little to do in the green-house. If the pots of cuttings of Verbenas, and other bedding-out plants are kept in the green-house, they must not have much water; but it will not do to let them get dry. All the plants should be cleared of their dead leaves, and if there is any disposition to get mossy in any of the soil of the pots, it should be stirred, and the moss be removed.

THE CONSERVATORY.

Here, as in the stove and green-house, the treatment must be the same as that of last month. Every flower that is available in all the departments of the garden must be available, and some assistance should now be obtained from the stove, where plants are forced. Rhododendrons, Azaleas, and many other subjects begun early, will now be coming into flower, and handsome evergreens, which all Camellias and Rhododendrons are when not in flower, must fill up the picture. Cleanliness, neatness, and order, will do much towards rendering the place sightly, and these can only be secured by constant attention.

KITCHEN GARDEN.

Cauliflower plants must be examined, from time to time, and all dead leaves be picked off, all damaged plants be pulled out, and the earth pressed to the roots of any that have been disturbed, especially if the frost has got hold of the ground, and made it spongy and rotten. If they are only covered with hoops and mats, they should be uncovered in all dry, open weather, but covered against frost, excessive wet, and snow. Those under hand-glasses should have air on the warm side by tilting, or, if the weather be mild, the glasses may be lifted. Plants in frames should be wholly uncovered whenever the weather will permit, and they should have but little water. Where any plants are merely placed in warm situations without other covering, let them at least be protected with loose litter.

Lettuce Plants which are in frames should be picked over, and thinned where they are too thick, and air should be given daily in mild weather by tilting the lights; and if the sun should shine, or the weather be open, they may be wholly uncovered an hour or two in the middle of the day. A small portion of seed may be sown on a warm border, or in a frame. The glasses, whatever be the state of the weather, should be closed at night, and covered with mats or transparent cloth; the latter is always the better, as it admits light, which is of the greatest consequence when the frosty weather prevents the frames from being opened at all. We have known Lettuce plants that have been covered with mats and litter, and completely closed for many days, with a heavy fall of snow over all of it, to be drawn and turned yellow, while those covered with transparent calico, and snow some inches thick for three weeks, were green and uninjured.

Small Salad.—Where this is in request, the various kinds may be sown, from time to time, to succeed former sowings. In hot-beds this can be kept up for all seasons without difficulty, because the growth is rapid, and you may calculate to a day the progress it will make.

Peas may be sown in sheltered situations in quantities likely to meet the demand, and it is desirable to put the sticks in directly; for it is a great preservative against birds, and does a good deal towards breaking off high winds and protecting against hard frosts. Any Peas sown before, and now through the ground, should be earthed up on the north-east side, and stuck without delay.

Radish Seed may be sown on a warm border, to be covered with litter of nights, and in hard weather some may be sown in a frame or hot-bed, with a few Onions and Lettuce mixed; the Radishes being drawn, leaves the others more room, and, where much Salad is wanted, they are always handy and useful.

Carrots.—Sow a small quantity in a warm situation for the chance of mild weather. They may afford a dressing or two of young spring Carrots early, and if they fail it will be of little consequence.

Beans may be sown in small quantities, for those who value them. It is always better to sow often, and few at a time, than to make any preparation for single heavy crops. Earth up those which are growing.

Endive requires tying up or covering over to bleach the hearts for use, and as they are protected as well as bleached by covering, it is a good plan to put flower-pots over them.

Artichokes may be earthed up to protect the roots from frost, or heaps of tan or ashes may be laid over them; they require litter of some kind, as they are somewhat tender.

Hot-beds for forcing Asparagus may be made, to succeed those wearing out; or, if none have been made, prepare them according to previous directions.

Mushroom beds must be kept dry; and if the coverings of straw have become wet, put fresh to them.

Dress, and dig, or trench, all vacant spaces, and leave them in ridges, or rough dug, to get the benefit of the frosts; and look well to previous months for directions not yet followed.

Potatoes.—Too many Potatoes are affected by the rot. They require to be dried as soon as possible, and stored under cover. Those which are affected should be laid by separately, and so much of them as are sound should be used. If the rotten part be cut away, or brushed out with a hard scrubbing-brush before boiling, the flavour of the sound part will be found in every respect equal to the soundest Potato in the crop. The rot goes no further if the Potato be put in the dry, but will dry away, leaving the sound part as fit for use as if it had not been affected; but, like all rotting vegetation, if allowed to heat, or kept in heaps, the entire mass will decay, and so also would any sound vegetable in close contact with it; therefore, dig up your crops, and by all means spread them on a dry floor, if practicable, and store them dry, instead of pitting them as usual; but those which are not affected may be treated as usual.

FRUIT GARDEN.

The operations in the orchard and fruit garden are merely a continuation of those already given, until the work is all completed. We can hardly enforce too strongly the necessity of looking well to the ordinary standard trees in the orchard; not one in twenty is as it should be, from the continual neglect of the orchard every part of the year but the gathering time, and even that is neglected. The great fault is, that of allowing them to ramble without control, as if neither knife nor saw existed; the wild trees of the wood and forest can hardly be worse; and then we are told that such and such trees have worn out. The fruit comes small and deformed, and simply because their heads have been neglected. Most Pear-trees would be improved by cutting half the top off, and thinning the remaining branches to let in light and air. In a season or two, and perhaps the very first season, the fruit all over it will be as fine as the few that grew on the top; for the finest fruit is always at the top when the tree has been long neglected. This very fact, of the best fruit growing at the top, is with many made the ground of objection to cutting the top away; they forget that by lowering the tree they make that which was the middle the top, and that the tree will bear twice as many fine fruit in consequence. While pruning the trees, care should be taken to make them shapely and sightly. Cut out all the weak spindly brushwood, and leave the best branches that are disposed properly to form a head, which will be rather flat than otherwise, but well calculated to bear, and bring the fruit to perfection.

Vines and Wall-fruit should be pruned and nailed, if not done before; but this work may be done all through the winter, up to the end of February, without the trees being much the worse for it, except looking untidy, and being more liable to be damaged by the wind; while the branches are unnailed and hanging about they are apt to fray and damage.

Continue planting until you have done all that is wanting. Gooseberry and Currant bushes, Raspberry canes, Strawberry runners, Wall-fruit trees, and Standards, will all do well now, if removed and planted in open weather; and, if the place is much exposed, the Standards must be staked in their places, so as to prevent the wind disturbing them. Look well to former directions about planting.

Propagating.—The cuttings of Gooseberry and Currant trees may be put in now in any spare place; they should be cut about eight inches long, and of the young wood grown the last season. Let them be inserted four inches in the ground, and the earth pressed well to them.

Fruit Borders.—If there be any old trees in a state of decay, or of which part has decayed, so as to leave the wall blank, plant maiden trees between or near them to fill up the vacancies. As the young trees advance the old can be cut away, and if there be any border in which the trees appear to be doing ill, cut a deep drain along the front, eight or ten feet from the trees, the whole length of the border, and of a proper slope to get rid of the water. Whether you lay down drain pipes, or stones, or bushes, or whatever else, to form the drain, so that it be effectual, it will in all probability be the means of recovering all the trees. Nine-tenths of the mischief among fruit-trees may be attributed to bad drainage, and the other tenth to the roots coming in contact with a subsoil which they do not like. The former evil can be remedied, or at any rate lessened; the latter is more difficult; but, in planting new trees, regard should always be had to the subsoil, and if bad, such as hungry clay, or sand, or gravel, enough of it should be thrown out to make room for the probable roots of a few years, and the space filled up with more congenial soil.

AMERICAN CRANBERRY.

This plant, the Oxycoccus macrocarpa, may be grown to great perfection, and will bear a very large quantity of fruit, when the conveniences of peat earth and water are at hand. All that is required is, on the face of a sloping bank, to form beds about four feet wide, along the back of which the water is to be made to flow in a channel, about three feet wide,—the beds being bordered with about a foot wide of grass. Two or three beds may be formed on the surface of the bank, the water being made to flow past the end of the highest bed, to the channel behind the next lower one, and the depth of water being regulated by a sluice across the gutter, at the end of each bed, so as to cause a greater or less amount to be retained to soak through the beds. In the channels or water-courses, water-cresses may be grown to perfection. The only attention required by the plants is to keep them clear of weeds, and to keep up the supply of water in the growing season.

Gladiolus blandus.

THE GLADIOLUS.

ITS CULTURE AND VARIETIES.

The name Gladiolus is derived from *gladius*, a sword, in allusion to the sword-like figure borne by the leaves. The greater number of the species are inhabitants at the Cape of Good Hope, the barren and sandy wastes of which they assist annually to clothe with beauty: others are found in Russia, in Turkey, in the South of Europe, and the southern parts of Africa.

Many of the Gladioli are extremely handsome, and some are deliciously fragrant. The original, or wild kinds of this genus, as of many others, have yielded to the dominion of art, and have alike tended to manifest the skill and perseverance of the cultivator.

The species and varieties of Gladiolus may be divided into two sections, one of which may be termed half-hardy, and the other hardy; the former includes the Cape species, and those of slender habit and small stature, not, perhaps, much less hardy than the others, but still not adapted, from these characteristics, to be cultivated in the flower garden; the latter section comprehends the more robust kinds and the greater part of the florist's hybrids.

It will be most convenient to devote some space, first, to the consideration of the treatment of these two divisions; and subsequently, to notice, somewhat in detail, some of the leading kinds in each division.

TREATMENT OF THE HALF-HARDY GLADIOLI.

The cultivation of the half-hardy Gladioli differs somewhat from that of the more hardy kinds; the latter are adapted for display, and to occupy an important and conspicuous position in the flower garden, whilst the former occupy a less prominent, though not less interesting, position, on the shelves or stages of the green-house, or in the secluded frame.

It seems hardly necessary to state, at the outset, that these Gladioli are bulbous plants, a thing so very generally known, and yet we cannot divest ourselves of the idea that some of those who may profit by these remarks are not aware that such is the case. They are, however, strictly bulbous, and in their treatment assimilate with that required by other bulbs; the characteristics of the climate they naturally inhabit confirm in them the seasonal manner of growth, which is found to characterise bulbous plants generally; these are a season of *perfect rest*, antecedent to one of *vigorous growth*, and rapid development, during which the plants spring up, the flowers expand, the leaves become matured, and elaborate a store of nourishment from which the following year's growth is developed, and then the whole gradually declines, all these parts pass away, and life becomes confined within the circumscribed tenement of the bulb. Such is a sketch of the manner of growth in bulbous plants generally; and in these Gladioli all this is impressed strongly on the plants, by the alternate hot, dry weather of the Cape of Good Hope, and its subsequent periodical rains.

We will commence with the season of rest, and the safe preservation of the bulbs when in a dormant state. This safety is best secured by allowing the bulbs to remain in the soil in which they have been grown; and the only precaution necessary to ensure this, is to keep the soil in which they are embedded from becoming damp during the dormant period. There is no doubt but that this method is the most natural; and in all cases in which it can be adopted, that is, with all potted plants, it is much the safest plan of preserving the roots. The reason of this seems to be attributable to the more perfect equilibrium in which the bulbs are maintained, when thus treated, than when the roots are exposed in any way to the vicissitudes of our variable climate; and in which they are often liable to be subjected to alternations of moisture and drought. At the Cape, there is none of this; the seasons are decided in their character, and the state of the plants exactly corresponds. The roots, therefore, should be suffered to remain in the soil; and this should be kept as free from moisture as can possibly be done; it is but a trifling consideration, where the roots are stored by, so that this condition is secured them, and they are at the same time preserved from frost. With all bulbous plants kept in this manner, it will sometimes happen that some of them will spring into growth before the due season arrives: whenever this is observed, it is then too late to check them, and there is no alternative but to encourage their growth by the cautious administration of the stimulants, heat and moisture, in conjunction with light. It is desirable, however, that this premature growth should be avoided, and that they should remain in this quiescent state until the early spring months.

The period of excitement should commence when the days are lengthening, and the natural supply of light increasing; they will then, as soon as they vegetate, be surrounded by circumstances favourable to their growth, which will, in consequence, be vigorous and satisfactory, and the bloom will be perfect, highly coloured, and fragrant. When this excitement is commenced, it should by no means be carried on too hastily; vegetable growth is an act of progressional development; at first feeble and scarcely apparent, but gradually gaining more and more strength, until maturity is at length attained: these periods, therefore, should be discriminated. The stimulants of vegetation, which are heat and moisture, must, during the period of infant growth, be given with a sparing hand, having a twofold view both of the stage of development, and of the supply of light. As the extension of the plant goes on, and the young growth gains strength, and approaches the period of maturity, the application of stimulants may then be carried to the fullest extent the constitution of the particular plant is enabled to bear. In most cases, the season at which this takes place will also bring with it an increase of light, a circumstance which is sufficient to justify the more liberal application of nourishment.

The operation of potting should be performed just prior to the period of growth, the bulbs being, at that time, in the most favourable condition to profit by the change. They should be carefully separated from the old soil; and, the strongest bulbs being selected out, they should be repotted either three, four, or more in a pot of the size known as thirty-twos, a matter which must be determined by the size the kind is known usually to attain. If smaller sized pots are preferred, a proportionately less number of bulbs must be planted in them. The bulbs should be placed as near the edge of the pots as may be convenient; for this will allow of a greater space for their roots to grow in; and they should be placed so as to be covered about an inch with the soil: this latter should be open and porous, rather inclining to sandy than otherwise. A very suitable compost would consist of two parts sandy loam, and one part well reduced (decayed) leaf-mould, to which a small portion of very coarse sand or grit may be superadded; the soil should not be sifted, but used with every particle of turfy matter that can be retained. The pots should be well drained with a large piece of a broken pot placed directly over the hole in the bottom, with the concave side downwards; and on this an inch or two of broken crocks, brick, or any similar material; this should be covered with a handful or two of rough turfy soil, or moss, sufficient to prevent the soil from intermixing with the crocks; it will also be of use, for the purpose of facilitating the drainage, to throw in amongst the soil, at the time of potting, a quantity of charcoal broken to the size of nuts. Depth rather than width is required in the form and construction of the pots, as bulbous plants almost invariably have a tendency to strike their growing roots downwards. The soil should be in a medium state of dampness, so that it will not consolidate by reasonable pressure; and in that case, with soil in this state, no water should be given at the time of potting, unless the bulbs are actually in a growing state; if they have not commenced growing, they will abstract slowly a sufficient quantity of moisture from the soil to excite them into growth, and then it may be supplied, but only in small quantities until they have advanced to an active growing state.

Provided the bulbs remain inactive, that is, in a state of rest, without evincing signs of growth during the winter, this potting may take place early in February, or somewhat earlier or later, according to the backwardness or forwardness of the season, or other circumstances. No better place can be selected for them than a shelf near the glass in a greenhouse. They will succeed well enough, and come forward with the advance of the season, in a frame, if means are taken to keep it a little warmer than a cold frame, by covering at night to exclude cold, and regulating the opening and shutting of the glass sashes, so as to take advantage of, and husband the heat of the sun, communicated in the daytime. Such a frame needs, however, considerable precaution to render it free from the access of damp to the interior, which, if confined, would destroy the bulbs when not in a growing state, and, at any rate, would produce considerable injury. Perhaps no better way could be adopted of rendering such a frame impervious to damps from below, (the principal source whence the evil arises,) than that of covering the floor on which the frame rests, with a good coating of the asphalte now so much used for walks, pavement, flooring, &c.; for if communication with the damp soil below can, by this means, be cut off, the dampness of the atmosphere can be excluded and prevented from acting injuriously by a proper attention to ventilation and the regulation of the glass sashes. If their growth should take place during the winter months, either the green-house, or a situation equally favoured with respect to heat and light, would be essential to the proper development of their foliage and blossoms.

The subsequent treatment, from the time of potting to the period of blooming, is chiefly of a routine nature, the administration of water being the principal operation requiring to be attended to. While in bloom, the plants may either be placed in the green-house, or in a light and airy sitting-room, during the period they continue in beauty. After the bloom is past, the growth of the leaves should be encouraged as far as possible until they are fully matured, during which period they ought to be very fully exposed to the influence of light; and when the full growth is attained, water must then be very gradually withheld, until they are again brought to a state of rest.

TREATMENT OF THE HARDY GLADIOLI.

The hardy kinds require the same general features of treatment which have been referred to in connexion with the half-hardy kinds, but adapted to the open ground; with this difference, that it is sometimes found necessary to take up the roots when not in a growing state, as a matter of convenience. This is, however, by no means to be recommended; for, in all cases where the situation and circumstances are at all adapted to their growth, they are far better left in the ground undisturbed for at least three or four seasons.

These Gladioli produce a most beautiful display, either when planted in masses, or in single patches; and they are likewise accommodating in their nature, inasmuch as that several kinds at least do not refuse to grow in whatever soil may happen to exist, provided the broad and universal essentials of thorough drainage, pulverization, &c. &c., are secured to them. Perfect success, however, in the display of the flower garden, involves that a preparation be made for each kind of plant introduced to it; and when they are grown together in beds or masses, this can readily be done without inconvenience. In preparing a bed for Gladioli, our plan would be to remove the natural soil to the depth of eighteen inches; six inches of this space would be filled in with broken bricks, stones, or other materials suitable for securing perfect and permanent drainage; on this should be laid a stratum of turfy, loamy soil, which may be roughly chopped up, and laid on to about the depth of three or four inches; the use of this would be to serve as a reservoir to the plants in dry weather, during the summer, and to preserve them against injury from the want of sufficient nourishment, whenever a rapid change in the temperature might otherwise have the effect of scorching the plants before their necessities were observed; above this turf would be placed from a foot to fifteen inches of a prepared compost, which would be continued above the general level of the surrounding ground, for two reasons: first, to secure it against being too abundantly supplied with water, which would, probably, sometimes be the case, if the surface were below the ordinary level; and secondly, to provide a sufficient height for its subsiding a little, which it would doubtless do to a greater or less extent. The compost used would consist of one part of the original soil, if of tolerably good quality; one part, sandy loam;

Gladiolus Gandivensis.

one part, turfy peat; and one part, coarse drift sand. The whole of this preparation would be attended to during the frosty weather of winter, and the soil laid up in ridges, and frequently turned over and moved, so as to receive the full benefit of exposure to atmospheric influence.

As we are brought to the consideration of a beginning, we will suppose the cultivator to have his plants brought forward in pots, in frames. By the middle or end of March, or early in April, the plants would be ready to plant out, and the weather would probably be such as to incur little risk of their sustaining any serious injuries from its unfavourableness; the plants would have been prepared and brought forward in the frames, being potted early in February and encouraged to grow, so as to be at the time named of some considerable size and strength. They should be planted in patches of three or four bulbs, near together; for the Gladioli like company, and they never thrive so well, or produce so good an effect, when separated to single bulbs: these patches should be planted from a foot to eighteen inches apart each way, according to the size and height the particular kind may attain to. Besides this, with no other attention than the application of a portion of water in dry weather, and the favourable condition of the atmosphere and season, they will grow away freely, and produce flowers in due season. It is not, however, until they become a year or two established in their situations that their beauty will become realized in all its perfection; the second season they will far exceed in beauty what they were in the first; and they will continue to grow and flower freely for several years, if circumstances continue favourable.

It would be found to be of great assistance to the plants to adopt some plan by which the soil may be protected from excessive heat, which frequently, during the height of the summer, has the effect of injuring the lowermost leaves. One means of remedying this evil, is to cover the surface of the soil with green moss, retained in large flakes as obtained from the woods, which, if kept damp, will retain its colour for a length of time, and have a very pretty effect. Another means of effecting the same end, is to sow dwarf trailing annuals among the plants, and to let them cover the surface. Mignonette, Collinsia grandiflora, Nemophilas, and similar plants, will be suitable.

The principal after attention they require would be to cut away their decayed stems in the early part of the winter, and then to spread about two inches of leaf-mould over the surface of the bed; this will serve a two-fold purpose, viz. to protect the roots if the weather is severe, and also to afford them some degree of nutriment when the growing season again arrives. When it became necessary or desirable to transplant them, it would be only to see that the drainage of the bed was perfect, to renew a portion of the soil if found necessary, and to take up, separate if required, and replant a portion or all of the patches of plants.

Such would be the course to pursue with those kinds of which plants were plentiful. There are, however, others—hybrids, which have obeyed the florist's call, and which will, doubtless, occasionally add to the variety which may, at the time, exist among these fine plants. The roots of such as these will, for a time, at least, be rare; and therefore what has been advanced with reference to the treatment of the plants in patches must be understood of them as referring to single bulbs. The result, as far as culture is concerned, will be the same, although the effect, in consequence of the smaller bulk of blossom, will be less imposing.

Gladiolus undulatus.

PLANTING IN THE OPEN GROUND.

The process of planting a bed of Gladiolus, where there is no convenience for bringing the plants forward in pots, is the same as that followed in the planting of hardy bulbs. The first thing to be done is to prepare the bed for the reception of the roots; this may be done by removing the old soil to the depth of eighteen inches; the space is then to be filled up with three or four inches of rough brickbats, and other open porous materials, for drainage, and on this, about eighteen inches of the best soil that can be procured. This soil may either consist of one-half loam (turfy), one-fourth sandy peat, and one-fourth river or drift sand, which would form a capital, though rather expensive, mixture for them; or, if the original garden soil is of tolerably good quality, a portion, from one-third to one-half of this, may be used, mixed with a proportion of compost similar to the above. The bed will then be raised three or four inches above the ordinary level; the surface should be regulated, making it somewhat highest in the centre, and rounding off to each side. The rows should then be marked out, as for planting out those raised in pots; and drills should be drawn with a hoe, about four inches deep, in which to deposit the bulbs. The operation of planting consists in placing the bulbs at the regular and proper distance apart in these drills, and then covering them over with the soil, and rendering the surface even, and somewhat rounded, as it was before the drills were formed.

This must be done in mild, open weather, at an early period of the spring, say about the beginning or middle of March; a little latitude may, however, be taken as to the period of planting, so that it is all done under favourable circumstances of weather, and when the ground is dry and in good condition, though it will be advisable not to delay much later than the time mentioned, if it can be avoided. In any case, the bed must be protected from any frosts that may be severe enough to penetrate to the bulb or plant. Slight frosts, affecting only the surface, will not do any injury to the roots; and it is not often, at that period of the year, that we are visited with frosts severe enough to be likely to penetrate into the earth so deep as the roots. The readiest means of affording protection will be by means of hooped sticks bent over the beds, on which mats may be stretched at night, and removed during the day, in fine weather. More elegant coverings may be made of light frame work, fitted with some of the asphalted felts now in use, or even with painted, oiled, or tarred canvass, all of which are neater and less littery than mats, and are equally, or even more, effectual, from their greater efficacy in throwing off heavy rains.

Gladiolus namaquensis.

When the beds of Gladiolus become established, there is little fear of their enduring the winter, provided the beds are well drained, and the surface is covered over with some dry repellant material, of which none is better than sawdust. It must, however, be removed when its office is fulfilled, and not incorporated amongst the soil. Beds of Gladiolus flower much more vigorously and beautifully if they are allowed to remain undisturbed for years; and, when so left, if any of the roots should push up through the surface of the soil, or become uncovered, a portion of new soil should be added on the surface of the bed. When it becomes necessary, for the sake of rearranging and regulating the whole, to remove the plants from the beds, they should not be too much divided at the time of replanting; a little patch of roots always blooms better than a single bulb, and, besides, from the greater number of flowers in proximity with each other, a better effect is produced.

The month of March is here recommended for planting out new beds of these plants, because they are not strictly hardy, and at that period there is little risk of injury from frost. If, however, some of the modes of protecting the beds already alluded to were employed, there would be little risk in planting during the autumn, say October, and the result will probably be a much earlier bloom.

THE RAISING OF NEW VARIETIES.

In the Gladiolus there are ample materials for the florist to work on, and characters which afford every promise of containing the embryo of great achievements. A vigour of constitution and growth, perhaps, scarcely equalled among plants of this class, mark it out as peculiarly adapted to be wrought upon; there are, too, several distinct habits of growth, and different forms of the flowers; and there are colours in great variety and profusion; and, moreover, there is in some a delicious and powerful fragrance. With such materials as these the florist will surely bring into existence a race worthy of his estimation, equally as much so as any of those upon which his care and attention is now lavished. The florists of the continent have already taken up the task, and produced some fine hybrid varieties; and they are, doubtless, now busily, though silently, engaged in effecting still greater changes and improvements. Many fine hybrids have also been raised by the florists of this country.

The proper course to follow, in order to obtain new and desirable variations, is to select, first of all, those kinds in which the qualities desired are to be most prominently discovered; from the blossoms selected and designed to bear the seeds, the anthers, or little thread-like pollen-bearing bodies, must be removed as soon as the flowers burst open, and before the stigma, or seed-producing organ, is in a mature condition, such as to be influenced by contact with the pollen dust. The flowers should then be covered over with gauze, to prevent the ingress of insects; and, as soon as the stigma is in fit order, that is, when it spreads a little and becomes viscid at the point, the pollen of the variety which is selected as the other parent, is to be conveyed to it, and the flower again secured by the gauze, until it begins to fade: each flower, thus operated on, should immediately be labelled with its own name, and that of the kind by which it was impregnated. When the seed ripens it should be gathered and carefully preserved separate till the next spring, when it should be sown in boxes of rather sandy soil, and started in a gentle heat, and gradually inured to a cool frame. The first season they may remain in these boxes with the ordinary care of watering, weeding, &c.; and in the following spring, after receiving a top dressing of leaf-mould, they may again make their season's growth in these boxes; the next season they may be subjected to the treatment of full-grown bulbs; many of them will flower during the summer, and, probably, all in the following one. No seedling hybridized flowers of any value ought ever to be raised without being thus labelled, and kept separate; the extra trouble is nothing compared with the information and practical lessons which such a course is calculated to convey.

Gladiolus recurvus.

DESCRIPTIVE LIST OF HALF-HARDY GLADIOLI.

Gladiolus alatus (the wing-flowered Corn-flag).—Native of the Cape of Good Hope. The leaves are sword-shaped, narrow; the flowers broad and large, with the two-side petals larger than the others, like a pair of wings, orange-red with yellow on the lower petals. Flowers in May; one foot high. A variety of this, called Algoensis, has pretty dark flesh-coloured flowers.

Gladiolus angustus (the narrow-leaved Corn-flag).—Native of the Cape. The leaves narrow and curved; the flowers with a long narrow tube, and wide-spreading pale yellow, or cream-coloured limb; the three lower petals marked with a large crimson heart-shaped outline in the centre of each, with a crimson line extending to the base. Flowers in June; two feet high.

Gladiolus campanulatus (the bell-flowered Corn-flag).—Native of the Cape. The leaves lance-shaped; the flowers bell-shaped, light purple. Flowers in May; one foot and a half high.

Gladiolus carneus (the flesh-coloured Corn-flag).—Native of the Cape. The leaves are long and broad; the flowers large, with a slender tube, flesh-coloured, with a broad crimson stripe or feather in the centre of the lower petals. Flowers in May and June; one foot high.

Gladiolus cochleatus (the spoon-lipped Corn-flag).—Native of the Cape. The leaves are linear, long, and rigid; the flowers white and red, the lowermost segment being broad and hollowed like a spoon. Flowers in March; one foot and a half high.

Gladiolus Colvillii (Colville's Corn-flag).—An hybrid variety. The leaves are sword-shaped, slightly ribbed; the flowers spreading, scarlet and yellow. Flowers in June and July; one foot high.

Gladiolus cuspidatus (the tall Corn-flag).—Native of the Cape. The leaves are very broad; the flowers large, with a slender tube, and narrow undulated petals, resembling G. carneus in form; they are creamy white, with a rich chocolate or purple feather in the centre of the lower petals. Flowers in June; two to three feet high.

Gladiolus debilis (the weak-stemmed Corn-flag).—Native of the Cape. The leaves are linear and long; the flowers white, spreading, on a slender stem; the two lower inner petals have a deep carmine spot near the base. Flowers in May; about one foot high.

Gladiolus edulis (the eatable Corn-flag).

—Native of the Cape. The leaves are linear and long; the flowers white. Flowers in May and June; one foot and a half high.

Gladiolus gracilis (the slender-stemmed Corn-flag).—Native of the Cape. The leaves linear; the flowers between bell-shaped and ringent, bluish grey, paler at the throat, and the two lower petals marked with dark spots and bars. Flowers in March and April; one foot high.

Gladiolus hastatus (the halberd-spotted Corn-flag).—Native of the Cape. The leaves are long and sword-shaped; the flowers white, with a rose-coloured heart or halberd-shaped mark on the lower petals, bordered with violet. Flowers in April and May; one foot and a half high.

Gladiolus hirsutus (the pubescent-leaved Corn-flag).—Native of the Cape. The leaves are narrow; the flowers rather small; there are several varieties with flowers of different shades of pink and rose, and also varying in size and in the time of blooming, some flowering in May, others in January; two feet high.

Gladiolus hyalinus (the glassy Corn-flag).—Native of the Cape. The leaves are narrow; the flowers spreading, yellow and red, not numerous. Flowers in May and June; one foot high.

Gladiolus namaquensis (the Namaqua Corn-flag).—Native of that part of Africa called Namaqua land. The leaves are thick and oblong, with a blunt point; the flowers large, spreading, deep red with yellow at the base of the centre lower petals. Flowers in June; one foot high.

Gladiolus recurvus (the recurved petalled Corn-flag).—Native of the Cape. The leaves are long and linear; the flowers large, gaping, sulphur-coloured, suffused, and edged with a deep border of lilac, and with three stripes on each petal; the flowers are scented like violets, or orris-root. Flowers in April and May; two feet high. The stem is spotted.

Gladiolus tenellus (the slender Corn-flag).—Native of the Cape. The leaves are very narrow and slender; the flowers yellow, variegated, two on a stem. Flowers in May and June; about one foot high.

Gladiolus trichonemifolius (the trichonema-leaved Corn-flag).—Native of the Cape. The leaves very narrow and rigid; the flowers funnel-shaped, bright yellow, the base of the lower petals marked with purple rays; very fragrant, like violets. Flowers in May; one foot high.

Gladiolus trimaculatus (the three-spotted Corn-flag).—Native of the Cape. The leaves narrow; the flowers pale salmon-colour, with a deeper coloured feather. Flowers in June; one foot high.

Gladiolus tristis (the sad-coloured Corn-flag).—Native of the Cape. The leaves are linear, four-sided, furrowed; the flowers funnel formed, pale sulphur, feathered outside with brown; they are very sweet scented in the evening, smelling almost like a pink. Flowers in April and May; one foot and a half high. There is a variety with deeper yellow flowers.

Gladiolus versicolor (the various-coloured Corn-flag).—Native of the Cape. The leaves are long and narrow; the flowers large and spreading. There are two or three varieties; *var.* major has reddish flowers with crimson streaks; *var.* binervis has lilac flowers with purple streaks, both are very fragrant in the evening; *var.* tenuior has very curious yellowish flowers, thickly dotted with crimson and purple: this is very fragrant in the daytime. Flowers in May; one foot high.

Gladiolus viperatus (the viper-flowered Corn-flag).—Native of the Cape. The leaves are sword-like; the flowers spreading, having a fanciful resemblance to the head of a snake when hissing, greenish grey, with a purple feather, exquisitely fragrant. Flowers in May; two feet high.

Gladiolus Watsonianus (Watson's Corn-flag).—Native of the Cape. The leaves linear-lanceolate, short, plaited; the flowers funnel-shaped, bright red with a white centre. Flowers in March; one foot and a half high. There is a variety with the lower half of the petals chequered with yellow and red.

DESCRIPTIVE LIST OF HARDY GLADIOLI.

Gladiolus blandus (the fairest Corn-flag).—Native of the Cape. The leaves broad; the flowers large, flesh-coloured, with pale red spots on the lower petals. Flowers in June; two feet high. There is a beautiful variety with pure white flowers; another with very pale purple or lilac flowers; and another with light pink flowers, with crimson blotches near the base. They are all very beautiful.

Gladiolus byzantinus (the Turkish Corn-flag).—Native of Turkey. The flowers of this are larger than those of G. communis, and of a rich purple red, with a pale feather. Flowers in June; two feet high. G. byzantinus albus has white flowers with a dark feather.

Gladiolus cardinalis (the superb Corn-flag).—Probably a native of the Cape. The leaves are sword-shaped, very glaucous; the flowers are large and spreading, borne upwards from a gracefully bending stem, of a brilliant scarlet, the three lower petals marked with a broad white feather or streak. Flowers in July and August; two feet high. A variety called cardinalis blandus has pale scarlet flowers, with a white feather; and cardinalis fulgens has pale crimson-shaded flowers.

GLADIOLUS COMMUNIS (the common Corn-flag).—Native of the South of Europe. The leaves are long, sword-shaped; the flowers large, and funnel-formed, of a rosy-purple tint, with a light feather. Flowers in June; two feet high. There are varieties both with white and flesh-coloured flowers.

GLADIOLUS FLORIBUNDUS (the many-flowered Corn-flag).—Native of the Cape. The leaves are large, broad, sword-shaped; the flowers very large, spreading; the usual tint flesh colour, with a lively red bar on each petal; the stems bear flowers a good way down. Flowers in May; two feet high.

GLADIOLUS GANDIVENSIS (the Ghent Corn-flag).—A Belgian hybrid, called there the "Glory of Ghent." The leaves are strong and broad; the habit and general appearance much in the way of G. psittacinus, but larger; the flowers are bright orange or flame colour, beautifully mottled with yellow. Flowers in July and August; three to four feet high.

GLADIOLUS INSIGNIS (the remarkable Corn-flag).—A hybrid. The leaves are long, rather narrow; the flowers large, crimson, with a dash of bluish purple on the segments, borne chiefly on the upper side of a bending stem, as in G. cardinalis. Flowers in July and August; three feet high.

GLADIOLUS MILLERII (Miller's Corn-flag).—Native of the Cape. The leaves are broad, sword-shaped; the flowers large, spreading, white changing to sulphur, with purple streaks on the lower petals. Flowers in April; one foot and a half high.

GLADIOLUS MORTONIUS (Morton's Corn-flag).—Native of South Africa. The leaves are broad; the flowers dingy rose-coloured. One foot and a half high.

GLADIOLUS PSITTACINUS (the parrot-like Corn-flag).—Native of the country bordering on the Natal river, whence it is also called G. natalensis. The whole plant is large; the leaves broad, sword-like; the flowers large, rather arched, something like a parrot's head, scarlet and yellow, prettily mottled. Flowers in August; it grows three or four feet high, bearing a long spike of flowers.

GLADIOLUS PUDIBUNDUS (the blush-flowered Corn-flag).—An English hybrid. The leaves broadly sword-shaped; the flowers large and spreading, blush-coloured, on a long spike, arranged in two rows. Flowers in July and August; two to three feet high.

GLADIOLUS RAMOSUS (the branching Corn-flag).—Probably a native of the Cape. The leaves are broad; the flowers large, and spreading, light rosy-pink, produced on a branching stem. Flowers in July; four feet high.

GLADIOLUS SEGETUM (the rough-seeded Corn-flag).—Native of the South of Europe, and allied to G. communis. The leaves are long, sword-shaped; the flowers large, lilac purple, with a pale feather, and borne in a long spike. Flowers in July; two feet high.

GLADIOLUS UNDULATUS (the waved-leaved Corn-flag).—Native of the Cape. The leaves are lanceolate; the flowers large, spreading, without scent. Flowers in May; one foot to one foot and a half high. There are three varieties; two with pink flowers, and one with yellowish or cream-coloured ones.

The following are hybrids, in general cultivation:—

G. ATROROSEUS, deep red, with pale feather; one foot and a half high.

G. DOBREI, rosy lilac, with citron-coloured feather; one foot and a half high.

G. EXPANSA, large, red, with crimson feather; two feet high.

G. HERBERTII, rosy crimson, deeper coloured feather; one foot and a half high.

G. HERBERTII PALLENS, delicate rose colour, with white feather; one foot and a half high,

G. PATENS, blush, with rose feather; one foot and a half high.

The florists' varieties already in existence are very numerous, seedlings being imported annually, both from Guernsey and the continent, by the hundred.

ON THE CULTIVATION OF ALPINE PLANTS.*

THE term alpine, taken in its widest sense, as applied to a class of plants, implies not only those small interesting objects which are found in elevated situations, but all the diminutive perennial plants found in any situation whatever, not being naturally aquatics. This tribe of plants has, of recent years, been very much neglected, owing, I apprehend, to their habits in general, and the materials most congenial to their growth, not being properly understood by gardeners; indeed, there are but few persons who seem disposed to make sufficient inquiry into their habits or character to enable them to grow them successfully. It is a very general, though certainly a most mistaken, notion, that, because many of them grow on the summits of mountains, and in other very exposed situations, they are capable of enduring an intense degree of cold, and are therefore left unprotected during the winter; but, from this cause, many of them perish—a conclusion which might easily be arrived at, were we to take into consideration our very variable climate, and the consequent fluctuation of heat and cold, humidity and moisture, to which these plants are subjected in this country. By a careful examination into the circumstances in which they are naturally placed, it will be found that, so far from their being exposed to any sudden transition of temperature, or to the action of intense cold, they are, during the winter season, or the greater part of it, enveloped in snow, which is impervious to severe frosts, and forms a protecting screen equal, if not superior, to any the art of man can apply, at least, where there is any bulk of it, because it is then maintained at a very trifling degree below freezing point, its surface merely being affected by cold or heat. These plants, whilst in this state, exist in comparative inaction, but in a uniform state as regards heat and moisture, so that, whatever change takes place, it is so gradual, that little or no injury can result from it. It cannot, therefore, seem strange at the want of success which is, for the most part, realized in their cultivation. I will now briefly state the manner in which I have grown them, and which has been attended with considerable success. About the beginning of August they are shifted; those intended for specimens are put into pots four inches deep by six across; and those for stock in pots three inches across. I am principally guided as to what sort of soil I put them in, by judging in what situation they naturally grow: for instance, those that are found in very exposed places I put in a mixture of loam, peat, and sand, thoroughly incorporated with fine broken potsherds; whilst the more delicate sorts, and those which grow in moist, damp situations, are potted in sandy peat; in some instances with a very small addition of loam, and where pure leaf-mould can be had, a small portion is beneficial in both mixtures. After being potted, they are put in some shady situation, or into cradles over which hoops are placed, so that they can be exposed, shaded, or protected at pleasure. On the approach of winter, they are plunged to the rim in coal-ashes, or some other coarse porous material, and protected from severe frosts by suitable coverings. In this state they require very little water during the winter months, and when given, it is but very sparingly. On the arrival of spring they are unplunged; if this is not done they are apt to root out of the pot, and, when removed, receive a severe check. As the season advances they are shaded from the mid-day sun, and well sprinkled, night and morning, with water, gradually diminishing this on the approach of winter. The plans generally adopted for their propagation are by seed, which should be sown as soon as ripe; and by division of the plant, which can be done at the potting season.

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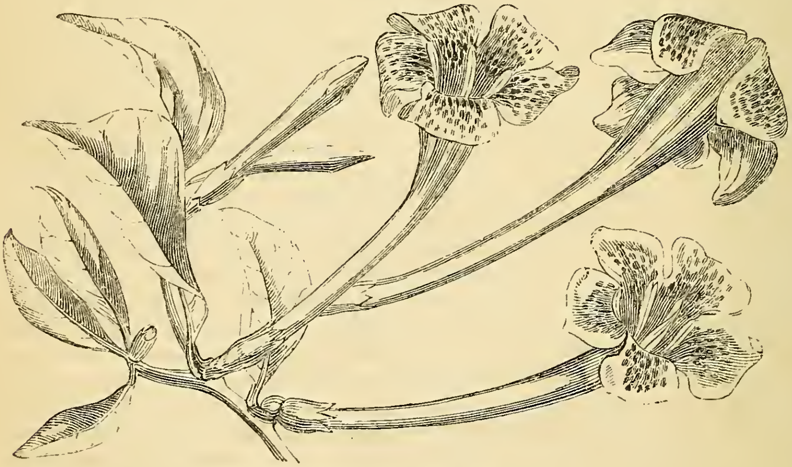
* From a paper by Mr. C. Moore, read at a meeting of the Regent's Park Gardeners' Society.



GARDENIA STANLEYANA.

(Hooker.)

LORD DERBY'S GARDENIA.

This fine plant has been already noticed at p. 183. In addition to what is there stated respecting the habit of growth, and the general appearance of the plant, we are now able to state that it is found to be a plant of free blooming habits. This we can state on the authority of Mr. Glendinning, of the Chiswick nursery, who says, that "the flowers are sent up in great profusion from the base of the numerous shoots, which, under good cultivation, are always abundant and healthy." They thrust themselves up through the beautiful green foliage in a nearly erect position, and resemble a series of spotted trumpets;

indeed, they "are not unlike the spotted Japan lilies, and, like them, also very fragrant." Sir W. Hooker states, that the young plant presented to the Royal Botanic Garden of Kew, when yet only a few months old, but set on the table of a stove heated below by the tank system, threw out flower buds from most of the dichotomies of the young horizontal branches; and, in the month of March, no fewer than ten of the noble flowers were expanded at one time. It is also stated that a plant sent as a just rooted cutting, a short time previous, was returned in bloom, from the Exeter nursery, for the purpose of being figured. "So freely does this beautiful species of Gardenia produce its lovely blossoms." This Gardenia is of easy cultivation in the stove. Mr. Glendinning, who became possessed of some of the plants brought by Mr. Whitfield, and has cultivated it during the past summer, recommends it to be grown in rough peat earth, leaf-mould, and silver sand, in nearly equal proportions. "Let the pots be well drained, and place a little moss over the drainage, to prevent the compost from mixing with the drainage; place the plant in a rather high temperature in a close house or pit, and give abundance of atmospheric moisture. Under these circumstances, the cultivation and flowering of this choice exotic will be certain and complete."

Some idea of the magnificence of this plant may be gathered from the fact that the flowers are nine inches long, and five inches across. The tube of the flower is of a fine deep purple colour, and the five broadly ovate segments of the limb of the corolla, "purple and white without, pure white within, with a shade of blush near the mouth, and covered, except at the margin, with oblong dots of deep purple elegantly arranged in oblique lines." When the flowers begin to fade, the purity of the white margin gives place to a delicate flesh colour.

GOMPHOLOBIUM VERSICOLOR;

VARIETY, CAULIBUS PURPUREIS.

(Hooker.)

THE PURPLE-STEMMED VARIETY OF THE CHANGEABLE GOMPHOLOBIUM.

The Gompholobiums are showy, pea-flowered, slender-growing, green-house plants, of great beauty, but of a somewhat delicate constitution, and requiring especial care to bring them to any considerable degree of perfection. Two or three species which are pretty generally in the hands of cultivators, are, however, produced at the grand metropolitan floral exhibitions, in a state of great beauty, and quite covered with their showy flowers; and this is especially the case with G. polymorphum, a slender species of climbing or trailing habit, and bearing large bright orange-crimson flowers. They belong to the natural order Leguminaceæ.

The present plant, which is a variety of G. versicolor, with purple-coloured stems, has been introduced by Messrs. Lucombe, Pince, and Co., of the Exeter nursery, from Swan River; and was flowered by them in May 1845, and produced at the exhibition in the garden of the Royal Botanic Society, in the Regent's Park. Sir W. Hooker's interminable name, though not inappropriate, is of very inconvenient length.

The habit of the plant is that of an upright, twiggy shrub, rather inclined to grow tall and thin, unless kept within more desirable limits by timely pruning; it, however, bears cutting well, and then assumes a more bushy habit, and flowers very freely. The stems are furnished with alternate trifoliolate leaves, the segments of which are rather broadly linear; and, from the upper part of the branches of the plant, the flowers are produced in little axillary racemes of two or three together: the flowers are large, pea-shaped, and a rich deep red colour.

It is a green-house plant, requiring similar treatment to the other species; that is, to be potted in a soil of sandy peat earth in a rough turfy state, in pots perfectly well drained; to be carefully and regularly supplied with water, in very moderate potations through the winter months, and more liberally, though guardedly, in summer; to be allowed the free access of air, when mild and genial; to be shaded from intense sun heat in summer, and to be guarded from frost in winter; and at that season placed as fully in the influence of light as may be possible.

SPATHOGLOTTIS FORTUNI.

(Lindley.)

MR. FORTUNE'S SPATHOGLOTTIS.

This is a dwarf and rather pretty Orchidaceous plant, and one of those which are called terrestrial, in consequence of their growing in the soil, in contradistinction to those which are epiphytal, that is, growing on the branches and trunks of trees, rocks, stones, and deriving stability or support only (not nourishment) from those substances. It grows up with two lance-shaped plaited leaves, and by the side of these springs up a stem about a foot high, bearing four or five rather handsome pale yellow flowers, the sepals and petals of which are ovate, and the lip divided, the two side lobes being blotched with crimson, and the middle lobe cuneate, or wedge-shaped.

It is a native of the granite-formed mountains of Hong Kong, where it was gathered by Mr. Fortune, collector to the Horticultural Society of London, soon after his arrival in China. Some of the bulbs sent home by him have produced flowers, in January last. Like most of the terrestrial kinds, the bulbs, or corms, lie dormant for some months after the foliage has decayed. Their cultivation is by no means well understood; and they form fit objects for developing that skill and perseverance which British gardeners are so well known to possess.

ANIGOZANTHOS PULCHERRIMUS.
(Hooker.)

THE BEAUTIFUL YELLOW ANIGOZANTHOS.

This plant belongs to a genus of New Holland herbaceous plants, of which several other species are introduced to our green-houses. They are exceedingly interesting plants, and some of them, as in the present instance, are very beautiful.

Anigozanthos pulcherrimus is a greenhouse herbaceous plant, the flower-stem of which rises from two to three feet high; the principal leaves form a flattened tuft at the base of the stem, but the stem also produces leaves, but more remotely, chiefly where the branches spring out, and these stem-leaves become gradually smaller upwards: the form of the leaves is linear-falcate, pointed, and entire; and they are clothed with dense greyish tomentum or down, which gives a hoary character to the branches, and lower parts of the stem, which latter is similarly invested. The stem is branched upwards, and becomes a large flowering panicle; "the branches themselves are apparently clothed with a short yellow down, but which is partially concealed by copious bright red hairs, themselves beset with lesser horizontal hairs, imparting a rich red velvety hue to this portion of the plant." The flowers are produced in a crowded manner at the ends of the small branchlets; they are arranged in two rows; individually, they are funnel-shaped, curved, divided at the end into six small unequally spreading segments; one division is split down further than the rest, and gives the flower an oblique character; they are clothed outside with bright yellow hairs, of the same nature as those on the branches, while the inner side of the flower is white.

The plant has not yet been known to produce flowers in this country; but small plants raised from seeds sent from the Swan-river settlement by Mr. James Drummond, are in the nursery of Mr. Lowe, of Clapton. From its peculiar nature, the dried specimens, however, sent also by Mr. Drummond, convey a full idea of the plant.

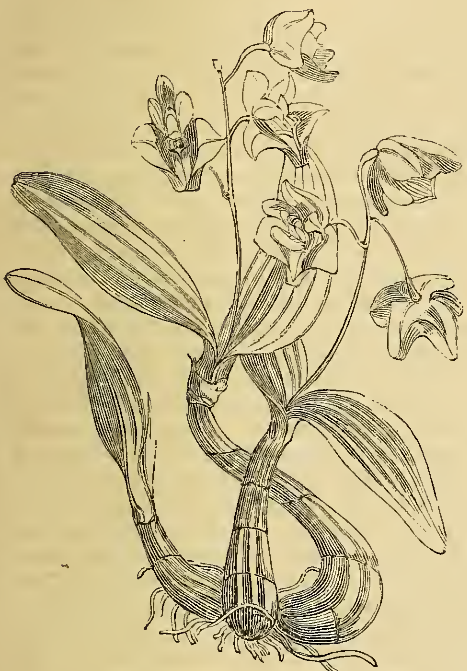
The species of Anigozanthos require to be potted in sandy fibrous peat soil; and to have a good proportion of pot room, well drained. While growing, they require, moreover, a good supply of water. A position in the greenhouse where they will receive an abundant share of light will be most proper for them; one of the front stages near the glass will form a very eligible situation. Nothing can yet be said as to its season of flowering, but there is little doubt that it will prove to be a plant highly ornamental to our green-houses.

All the species of Anigozanthos have their flowers covered with the short downy velvet-like matter already alluded to; one species has green flowers; a variety of it produces green and red blooms; and another species has flowers of a brown or rufous colour. They are all green-house plants, and natives of New Holland.

Anigozanthos belongs to Hæmodoraceæ, in the natural system of botany; and to the Hexandria monogynia of the artificial arrangement of Linnæus.

CABBAGE SPROUTS.

Very few people take half the pains they ought with Cabbages. When they are cut, no matter how, the stumps are left to bring sprouts, no matter when, nor how many. Now, the fact is, that when the sprouts begin to come, they should be all rubbed off but the best, or at most two; but if there be only one left to grow on each stump, it will grow faster and better, and be occasionally as good as the first head that was cut; instead of which, a multitude of small ones are allowed to grow, not any of which bring good hearts, and all are, for the most part, but a poor apology for greens. When a Cabbage is cut, the leaves should be cut off the stem, and as soon as the buds of the stump begin to grow, rub off, or out, all that are not wanted, leaving one of the strongest and best to grow into a head, which it will do in an incredibly short time; equalling, and more frequently excelling, the first head itself in flavour and appearance. This is adapted for families more than market gardens, because there is some trouble in rubbing or taking off the useless shoots; but it is well worth while in the case of early Cabbages, in a private family; for it forms an excellent second crop.



DENDROBIUM KINGIANUM.

(Bidwill.)

CAPT. KING'S DENDROBIUM.

This belongs to a race of which we very seldom introduce figures into this work, chiefly on account of their requiring a high temperature, and peculiar treatment, which places them in great measure beyond the reach of those to whom this work is specially addressed. In this case, we have one of several of this singular, and beautiful, and grotesque family, which by no means require the high temperature which, in the minds of many persons, seems hardly separable from the term "orchidaceous plants." From our own personal knowledge, we can state this plant to be an exceedingly pretty subject, and worthy of cultivation.

It is quite a small plant. The flower-stems do not rise many inches high; they issue from between a pair (usually so, but sometimes four) of oval leaves, on the top of a short jointed stem, each producing about three rather small, but exceedingly pretty, rose-pink flowers, spotted and marked with crimson in the centre. They are produced in the early part of spring.

The plant is a native of New Holland, and in cultivation requires only a warm greenhouse to bring it to perfection. It may either be potted in turfy peat earth, or attached to a block of wood, and suspended from one of the rafters. In winter it must have but little water, but in the summer a larger supply might be given. If grown on blocks, those that have been slightly charred on the surface are to be preferred. It should be fastened to the blocks with copper or zinc wire, the roots being enveloped in a slight covering of moss.

GEOLOGY FOR BEGINNERS.*

There is hardly any science more difficult to understand than that of Geology. The uninitiated are lost at whatever point they commence it; and they have accomplished no small portion when they have learned even what it means, and what ends it is intended to accomplish. Mr. Richardson has adapted his work to those who are altogether unacquainted with the subject. To commence with the definition of the science, geology, then, means an inquiry into universal nature, extending through all her kingdoms, animal vegetable, and mineral; and comprising in its investigations all time, past, present, and to come. The present explains to us the past; the past and present reveal to us the future. The examination into existing geological phenomena, causes, and effects, enables us to understand those which have occurred in past periods of our earth; to interpret nature by herself; and to appreciate agencies and results which are obscure and remote, by a comparison with such as are familiar and well known; while the study both of the past and present, empowers us to deduce presages of the future; and to infer the nature of those changes and vicissitudes which will doubtless occur on the face of our planet during the future eras of its physical history. It may be described, in a more compendious manner, as the investigation into the structure of the earth, and the nature of the animals and vegetables which have existed on the surface. Geology, therefore, is intimately connected with every branch of natural history. The author treats of it in its connexion with the various arts and sciences, and has unquestionably succeeded in making the path more clear to the young student than any of the more elaborate writers. We shall perhaps illustrate this point best, by quoting a portion of the third chapter, in which he gives first lessons in Geology, and shows the harmony of the science with revelation, a fact which has been doubted by learned divines, who have almost refused to enter upon the subject, and therefore condemned it blindly. Nevertheless, there are those, who, not content with restraining the science within sound and proper limits, run and write wildly, and by their enthusiasm do, as with many meddlers in other sciences, infinite mischief to the cause which they pretend to espouse, and to the advance of the study itself. The author, in the same chapter, then leads us to the evidences of the extreme antiquity of the earth itself; and, briefly accounting for its present appearance and its structure, gives a very neat, and easily understood, outline of the whole science. Our first quotation, therefore, will be from this chapter, as the best and most useful to those who have never studied the subject at all:—

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* Geology for Beginners. By G. F. Richardson, F. G. S., of the British Museum. London: Longman, Brown, Green, and Longmans, Paternoster Row.

"Harmony of the Science with Revelation.—Among the most valuable and most satisfactory of these must be enumerated the conviction, which its very earliest inquiries serve to convey, of the perfect harmony of the science with revelation, and the groundless nature of those fears which many well-meaning but mistaken persons so needlessly entertain of the possibility of a collision between the two. This gratifying circumstance of the accordance of both will form the theme of too frequent and ample illustration, during the following pages, to require more than a casual mention here; and it may suffice to dispel the fears of those who may cherish such unnecessary apprehensions, if we state, that, in all essential points,—and we would particularly instance the date of the creation of man,—we find the records of Scripture fully and completely confirmed by the evidence of physical fact. Nay, we may go farther, and add that this admirable study, so far from lessening our belief in the Deity, or our perception of His attributes, cannot but tend materially to enhance and confirm our appreciation of both. A science, the professed object of which is to enlarge and increase our knowledge of creation, cannot but expand and exalt, in a commensurate degree, our admiration of the Creator."—Pp. 82, 83.

From this the author proceeds to demonstrate—and he does it cleverly—the instructive nature of the science; and it is one of his prominent qualifications for the task, that he carries the reader along with him, by the simple and straightforward way in which he conveys his instruction and information. He says:—

"Geology has this, in common with all the studies of nature, that it teaches the unphilosophical character of our habitual ideas and impressions, and warns us to doubt even the evidence of our senses, until it is proved by scientific investigation to be true. Thus, while astronomy begins by convincing us, that the sun which we see to rise in the east, and to set in the west, performs, in fact, no revolution at all, but that the apparently unmoving earth it is which really performs the daily round; so geology commences her instructions with truths not less, but even more repugnant to our preconceived sentiments and opinions. It unfolds the fact, that the present condition of our earth, far from being of primeval date and character, as is not unfrequently supposed, constitutes but one of the numerous vicissitudes through which it has passed in the course of its eventful history. The mountains which we deem of antiquity coeval with the earth itself; the hills which in our phraseology are "old," to a proverb; this science convinces us, are of very different dates, and have all, geologically speaking, been elevated at comparatively modern periods. Again, from the earliest times it has been the habit of man to associate the idea of stability with the land; and of fluctuation and change of level with the sea. Geology, however, demonstrates the very reverse of this to be the truth, and shows that while the land has undergone changes and disturbances the most violent and revolutionary, and has been the scene of elevation and depression, of intrusion and dislocation, on the most extensive scale; the sea, from its very nature, as a fluid, must have constantly maintained the same unaltered level. The stones and rocks, which we habitually regard as having ever been the hard, refractory, and unyielding objects which we behold them now; science, by the external characters which they bear, by the gentle impressions of organic structure which they present—by the tender foliage of the plant—the delicate markings of the shell—proves to have been thus imprinted when their substance was soft and soluble, and by this means convinces us that all stone, all rock, whatever now is hard, once was in the state of sand, of mud, or of fluid. These are but a few of the numerous instances which might be adduced, of the valuable and instructive discipline of a science, which rids us of errors and prejudices derived from early habit and association, and implants in their stead more just and philosophical ideas of nature, and her Divine Author."—Pp. 83—85.

This done, the writer proceeds to the most delicate portion of his task, that of proving from stubborn facts the extreme antiquity of the earth. Scripture tells us that in the beginning God made heaven and earth ; and the earth was without form, and void. Now, however, we may associate this with the period at which man, and all that appertaineth to his use, were created in six days, there is nothing irreconcilable with the fact, that this globe, in some form or other, had then existed millions of years ; and that the words, "in the beginning," referred back to an origin ages before the creation of man, or the creation of any one animal destined for his especial use ; but it is better to quote Mr. Richardson :—

"Antiquity of the Earth.—Thus while we are accustomed to regard our planet as coeval only with man, and as dating but from the five or six thousand years which science and revelation unite to prove as the era of his creation, Geology demonstrates the far superior antiquity of the planet assigned for his abode. The mere investigation into the crust of the earth, that is, of the part accessible to human observation, will convince us that the substances of which it is composed, from their variety, extent, and order of succession, could only be the result of accumulation, continued through vast and incalculable cycles of time. We find that all the formations are aqueous and fossiliferous, with the exception of the granite, and gneiss, and mica-schist systems ; though even these, according to the highly probable opinion of many geologists, were originally of like nature with the rest ; the absence of stratification in the one instance, and of organic remains in both, having been occasioned by the intense heat which has reduced them to their present crystalline condition. The vast series of the remaining formations, and possibly even these, are therefore the mineralized beds of primeval oceans, with occasional but rare interpolations of fluviatile and lacustrine strata ; the deposits of seas, or of rivers, and lakes, bearing in their stratified arrangement, and the fossil relics of the animal forms which once inhabited their waters, incontestable proof of their sedimentary nature and origin. They are, it is well known, of immense extent and area, the marine formations rivalling in space and grandeur the vast Atlantic or Pacific ; while the fresh-water floods appear to have vied with the enormous lakes and inland seas of the American continent at the present day. These aqueous accumulations, subsequently to their deposition, have repeatedly undergone the action of disturbing causes ; the eruptive rocks have broken through the sedimentary deposits ; and volcanic ejections, terrestrial and submarine, have exploded from below, have pierced and shattered the superincumbent beds ; have forced and wedged their sheets of molten matter into the chasms of the strata they have divided ; or bursting to the top, have poured their waves, and spread their terraces over the surface of the whole. Periods of intense volcanic activity have been followed by others of repose, which have again been succeeded by revivals of former energy ; so that frequent alterations of this nature, of enormous extent and duration, have occurred, even in periods which are regarded as the most modern in the history of the earth.

"In pursuing the natural and legitimate mode of interpreting the past by the present, and observing the effect of similar agencies in existing nature, we are forcibly impressed with the slowness of these operations at the present day. Lakes are ascertained to shoal up, or deposit sediment, in the proportion of only a foot in a century ; and even oceanic deposits are known to be correspondingly tardy of accumulation. Hence we find that during the entire historic period, the physical geography of our globe, with the exception of local and minor modifications, has remained unaltered. The oceans, rivers, lakes and mountains recorded in Scripture, form the physical features of the same regions at the present day ; and arriving at a more modern period, and at localities less remote from ourselves, we find that the ocean which Cæsar crossed, still separates the Briton from the Gaul ; that the same rivers water the capitals of the same countries of Europe ; while the same Vesuvius which overwhelmed Herculaneum and Pompeii beneath its ejections, still threatens the surrounding districts ; and the same submarine volcanic agency, which, as we have mentioned, alarmed the Roman people, still continues in activity, and produces similar phenomena, at the present day.

"When, therefore, reverting from the present to the past, we contemplate those operations which have formed or modified the crust of our globe, and observe their extent and grandeur ; when we find evidence, not of a single change, but of cycles of mutations ; of seas on seas : with alternations of dry land in the existence of forests, rivers, and lakes ; together with proofs of volcanic agency, with its long-continued intervals of action and repose ; and when we reflect that nothing is made in vain, but that every created object has its sphere of usefulness, and therefore of duration; and when we look on the fair and harmonious world around us, and examine the diversified materials of which it is composed, and the wondrous agencies by which it has been elaborated into order, fertility, and beauty, we cannot avoid the conviction, so irresistibly forced upon the mind, that operations thus complicated and extensive, and results thus admirable and perfect, must have required an adequate period for their development; and that time, to an extent inappreciable, perhaps, by human powers of calculation, must have formed an essential element in the vast work of creation."—Pp. 85—87.

In the next portion, that in which the author endeavours to prove the extreme antiquity of the earth by astronomy, there are many singular facts which support his views, but they are more deeply scientific than our readers will care to peruse in this otherwise short notice. The facts, however, connected with astronomy are singular, and very conclusive to those who have given to astronomy sufficient attention; but the unscientific reader will hardly be convinced, at the first view, as to the rate at which light travels, nor as to the distance from this earth which some planets are assumed to be placed. To the uninitiated they will appear only so many assertions, which study may hereafter change to palpable truths, though he may not be ready at present to receive them as such; for instance, it will appear to the young student very strange that anybody can tell the distance of a planet from this earth, and especially when that distance is assumed to be "twelve millions of millions of millions of miles," and it may be equally astounding to read that the light by which these objects have become visible to us, must have been nearly two millions of years in its progress. We therefore leave this for future consideration, when the mind of the reader is prepared to receive them as facts. The most interesting portion of the work, perhaps, is the author's illustrations of the modern date of man. It is here that the scriptural account of the creation is confirmed by every fact adduced. The author says:—

"The comparatively modern period of the creation of man, and the inferior age of our race to that of the globe which we inhabit, is a fact revealed by Scripture and confirmed by science. The same internal evidence which convinces us of the extreme antiquity of our planet, affords the like satisfactory proof of the comparatively modern period of the origin of our species. The whole vast series of aqueous deposits are of course crowded with organic remains, with fragments of the weeds, plants, corals, shells, crustacea, fish, reptiles, birds and mammalia, relics of the vegetable and animal existence of the ancient earth; but no fossil remains of the human form have yet been discovered in the solid rocks themselves; or in any, save those accumulations of silt, or mud, which date from the most modern era—the yesterday, as it were, in the infinite history of the past. It is only in these accumulations of the historic period, that we discover the remains of even the most ancient families of mankind; that in this country we meet with the implements or utensils of our British ancestors, or the coins and weapons of their Roman invaders; that in Italy we find the Cyclopean structures and works of art of the Etruscans, a nation who appear to have preceded the Romans in the occupation of Italy, and to have excelled them in civilization and the arts of life; while vestiges of the Pelasgi are alike discoverable in similar deposits in Greece; and in the new world, traces exist of the Tulteques, a people who seem to have been the predecessors of the Mexicans, and their superiors in knowledge and improvement. In the solid rocks, we repeat, no traces of man are discernible. Yet had the human race been really the aborigines of the physical history of our planet; had they actually existed in its primeval times, their remains would, unquestionably, have been found scattered throughout its varied deposits from the oldest to the most recent in the series. No impediment exists to their conservation; our bones, composed of the same elements as those of the animal races, are equally capable of being kept from destruction; the same battlefield has preserved the bones of the horse and his rider; the same cavern which, in earlier eras, gave shelter during life to the hyena and the bear, and retained their skeletons after death, has alike preserved the remains of those human occupants, who, at a later period, found, in the same retreat, a refuge and a tomb. But a still stronger proof of the modern date of our species exists in the obvious fact, that if man had really been an inhabitant of the earth during its early history, his skeleton, or the mere fragments of his osseous structure, would have constituted the least of those relics which he would have bequeathed to the soil, of which he was an inhabitant. We should have discovered his mighty and majestic works, which so far transcend in duration his own ephemeral existence. We should have found his cities and his structures overwhelmed in the waters of ancient seas, or buried beneath the ejections of primeval volcanoes; his majestic pyramids sunk in the bed of early rivers; his mountain-temples, hewn on the surface of the deepest and the oldest rocks; we should have encountered his bridges of granite and of iron; his palaces of limestone and of marble; the tombs which he reared over the objects of his affection; the shrines which he erected in honour of his God! But in the absence of these, or any other trace of man, in any, save the most superficial of deposits, we are compelled to acknowledge the chronology of Holy Writ; to recognise the complete and satisfactory accordance of science with revelation; and to admit that the existence of man has not extended beyond those five or six thousand years upon the earth, which the Scriptures assign as the period of his creation. It will be self-evident that this fact, like many others in natural science, far from lowering our ideas of the Divine perfections, serves only to strengthen and exalt them. It is, in fact, impossible to form a more magnificent conception of Infinite bounty and wisdom than that which reason and revelation here combine to offer: representing the Supreme Being as first elaborating and perfecting our earth into one vast sphere of blessings; erecting, on a foundation of granite, a vast superstructure of sandstones, limestones, clays, shales, salts, coal, and the varied substances known as rocks; injecting their fissures and crevices with minerals and metallic ores; then, by the intrusion of volcanic agency, bringing these varied deposits near the surface, and so diversifying the soil as to present every variety of condition best adapted for its mineral, agricultural, and economical cultivation; tempering, as well, the climate to the degree best adapted for human health and enjoyment; peopling it with animals adapted for the use of man, for supplying him with food, and assisting him in his labours; and, finally, calling man himself into existence, to take possession of a world, which Infinite wisdom and benevolence had thus prepared and perfected for his reception and enjoyment."—Pp. 89—92.

One of the early errors of geologists, was that of assuming that at particular periods of the history of the earth particular plants were unknown, and this was assumed from the fact of the total absence in particular formations wherein many other plants abounded. Professor Lindley, by a very simple experiment, set this matter at rest, by proving that the absence of fossil remains was no evidence whatever of the absence of the plants at that period; but we must quote the substance of the experiment alluded to.

"The great preponderance of ferns, and of the higher order of cryptogamic plants, in the flora of the ancient earth, having excited, in a peculiar degree, the attention of naturalists, and it being conceived that the total absence of certain kinds of plants, and the constant presence of others, with other points of like nature and interest, might be accounted for by a difference in the capability of one plant beyond another of resisting the action of water, Dr. Lindley resolved on trying the result of an actual experiment. He, therefore, on the 21st of March, 1833, filled a large iron tank with water, and immersed in it 177 specimens of various plants, belonging to the more remarkable natural orders, taking care, in particular, to include representatives of all those which are either constantly present in the coal-measures, or as universally absent. The vessel was placed in the open air, left uncovered, and was untouched, with the exception of filling up the water as it evaporated, till the 22d April, 1835, that is, for rather more than two years. At the end of that time what remained was examined, when the following highly important results were obtained:—

"In the first place, it was found that the dicotyledonous plants, in general, had wholly disappeared, whence it was inferred, that they were unable to remain for two years in water without being totally decomposed; the principal part of those which did possess that power appeared to be *coniferæ* and *cycadeæ*, which are precisely those which we find best preserved in a fossil state: secondly, it seemed that monocotyledons survived to a considerable extent, whence it was concluded that they are more capable of resisting the action of water, in particular, palms and scitamineous plants, which are what we principally find as fossils; but that grasses and sedges perished; whence it was inferred that we have no right to assume that the earth was not originally clothed with grasses, because we no longer find their remains: thirdly, that fungi and mosses, and all the lowest forms of vegetation, disappeared, and that even *equisetum* left no traces behind; and finally, that ferns appeared to have a great power of resisting water if gathered in a green state, not one of them having disappeared during the experiment; but that the effect of immersion in water was to cause their fructification to rot away, a result which we constantly meet with in the fossil specimens.

"Hence, Dr. Lindley assumes, as a general result, that the numerical proportion of different families of plants, found in a fossil state, throws no light whatever upon the ancient climate of the earth; but depends entirely upon the power which particular families may possess, by virtue of the organization of their cuticle, of resisting the action of the water in which they floated, previously to their being finally fixed in the rocks in which they are now found."—Pp. 306—308.

The foregoing extracts will give the reader some idea of the author's style and competency; and we need not say he has handled the subject in a plain, simple, clear, and satisfactory manner. It is only necessary to add, that the volume is beautifully got up, the illustrations, which are exceedingly numerous and interesting, are admirably engraved and printed, and that the work must take its place among the most useful and inviting of those which are destined to win converts to the advantages of scientific research.

HINTS FOR THE CULTURE OF POPULAR FLOWERS.

The Auricula has been subject to the most gross ill usage: there is hardly a nasty thing that has not been recommended by one empyric or another, from the old florists down to the modern scribblers. The cultivation of the plant is, nevertheless, to be managed as easily as any other plant in request among florists, and with compost as inoffensive. Many fine collections have been successfully grown in good health and fine colour by means of the loam of rotted turfs, cow-dung rotted into mould, and silver sand, or with a proportion of turfy peat. They should be repotted about August, the drainage should occupy a third of the pot, and six-inch pots are large enough to bloom very strong plants in. All the winter months they should be kept in frames, very dry at the bottom, the plants near the glass; they should have very little water and plenty of air. About February, or early in March, the top surface of the soil should be disturbed a little, and fresh soil added, which is called top-dressing; this may be decomposed cow-dung and leaf-mould, in equal quantities, and silver sand enough to make the water go through it well; they may be watered more freely, have all the air they can in mild weather and warm showers, but no frost nor cold wind. As the blooms rise and begin to develop themselves, some of the smallest and least perfect pips may be removed, so that the number required for show be left; and as the blooms come out, they should be separated a little from each other by bits of cotton lint, or very soft moss, that they may all have room to open well, and in their places: they may also be removed to a sheltered place, and put under hand-glasses propped up by pots rather less than those the plants are growing in, so that the hand-glasses may be lower than the rims of the pots. After the flowering is over, they may be placed where they will receive the rains occasionally, but where they can be protected from excessive wet. If the seed be not wanted, it should be prevented from growing by picking off the decaying flowers with their footstalks only, and not by breaking the main stem. The offsets may be left on until the potting time, when they may be taken off, and if rooted, potted one in a pot; if not rooted, placed round the edges of pots and covered with hand-glasses for a time, but kept well watered. There are some localities in which nothing will make the Auricula succeed; but, generally speaking, attention is well rewarded by success. Seed may be sown in spring in pots and boxes, and be slightly covered and placed in a frame. The soil must never be allowed to get quite dry, and, as soon as they are large enough to take hold of, they may be pricked out round the edges of pots an inch apart, and left to grow until they are large enough to allow them each a three-inch pot. These require now the same management as the general collection in every respect. All the while they are flowering, Auriculas require to be shaded from the hot sun, but they must not be darkened.

Azalea indica.—This plant is easily grown and managed, even without a green-house, though it is much handier to place them in one if you have it. All that is required is to keep off violent frosts in winter time. They will grow and bloom with but little care and trouble. When the bloom is off is the most critical period, because they ought then to make their growth free, and when done they should rest, and then bloom will be set. The best soil is turfy loam, dung well decomposed, and peat earth, in equal quantities. They are grown in all kinds of fantastical shapes, on trellises, with numerous uprights and all manner of contrivances; but the only proper, gardener-like mode of training them is, first, as a bush, and secondly, as a standard—if as a bush, begin by stopping the leading shoot the instant the rooted cutting is potted, and as any of the side ones get stronger than the rest, so as to throw the plant out of form, they must be shortened in a similar way; in this manner keep the plant growing till the shoots have apparently made all their growth, they may then be placed in the open ground, in rather a sheltered situation, there to remain until the time to winter them again. A pit, without fire or dung heat, will keep them well enough, if covered during the hard winter with mats. The propagation is simple. Cuttings will strike in a cold frame, or even the border, though in all cases the use of a little bottom heat hastens the striking, which is sometimes an object. When they are required early in spring, they will bear forcing, but they are better in colour, character, and strength, if bloomed without. Seedlings may be raised very easily in a cold frame, potted out as soon as they are large enough to lay hold of, and kept in a common garden frame.

The Calceolaria requires nearly the same management as the Cineraria, but is scarcely so tender as some kinds; both these plants are subject to the attacks of insects, and hence frame culture, which gives great facilities for the destruction of the red spider and thrip, is far the best to adopt. The seed of the Calceolaria should be well ripened before it is sown, notwithstanding the theory of sowing unripe in preference; and we are advocates for sowing as soon as it is thoroughly ripe, in preference to waiting till the spring. Nevertheless, as the seedlings are not the most hardy things in the world, in a bad winter the seeds may be kept in their pods until the spring, if on other grounds it is more convenient. It is desirable that, independent of the protection of a frame, a bell or hand glass should be covered over it, or some have the soil of the pot below the surface, and cover with a perfectly flat piece of window glass. When the seed germinates, the young plants must have air and moisture, and, as soon as they can be pricked out, they should be placed three or four round the edges of large sixty sized pots, where they may remain the rest of the growing season. They may then be potted singly in similar or a size larger pots, so as to be established by the winter, when they are to be supplied with plenty of air, not too much wet, and be protected against frost. In the spring they will rise for bloom, and notice must be taken of those which approach nearest the standard laid down. By cutting them down after blooming, and earthing them well up, they will throw side shoots, which, if not already rooted when taken off, will strike freely under a glass. Specimen plants must not be deprived of their side shoots, because they will the following season throw up so many bloom stalks, nor must any portion of the shrubby branches be cut away if the plant is to be a specimen.

Camellia japonica.—The great art of cultivating the Camellia consists in bringing the plants into a good form, and setting them well for bloom; the former can only be done properly by stopping the too vigorous shoots to excite lateral branches; the latter requires merely that the plant shall not be subject to violent extremes, so as to check it while making its growth. The soil it thrives best in, is a half of turfy loam, a third of the mould of rotten dung, and the rest turfy peat; in other words, three-sixths loam of rotted turf, two-sixths decomposed dung, say from an old melon bed, and one-sixth turfy peat; these should lie together, and be frequently turned, and be a year old for use, if possible. The shifting of Camellias should take place when the bloom is done, and the plant begins to grow, but they are always the better for being a little confined. If you wish to grow them pretty fast, which is the case with new and dear things, it is very easy to get two growths in a year; for instance, when the plant has begun its growth, put it in moderate heat, and, as soon as it has completed its growth, remove it to the green-house to harden, and after that in the open air to ripen; by July, the wood will be hardened enough to begin again its growth. First examine it, to see if the roots are matted a little, and if they be, shift the plant to a pot a size larger, remove it to the green-house a while, and then to the stove; if the buds swell for bloom, pull them all off. The plant must be shaded a little, and must not want for water. It will soon move, and make a stronger growth than ever the spring one was. When it has completed its growth, it may go back to the green-house, and if the weather be fine, have all the air that can be given; from this to a pit, where it can be protected from frost, sun, wind, and rain, whenever either come too strong for it. The Camellia can be grafted, inarched, or raised from cuttings, but nearly every sort will grow best upon stocks of the strongest growing kinds, and therefore grafting and inarching are the principal means resorted to. The grafting may be done with a single eye and an inch of wood. Cut the little graft, which has its eye at top, in the form of a wedge; then cut the stock down to the height at which it is wanted to work it, having an eye on the top; then cut a slit down it, so sloped as to receive the wedge, and when together the top eye of the stock draws the sap so far: the join, after tying, is neatly covered with grafting wax. Inarching is cutting the stock with a flat side, and the piece of plant which is to be inarched flat on one side, and then, by means of a tongue cut in each, to keep them from slipping, they are joined together, while both plants are in their pots; this unites in a few weeks, when the upper part of the stock is cut away, and the under side of the plant inarched is cut away, and leaves its branch to form the new plant. The stocks are reared by cuttings of the single varieties, which strike freely in sand under a bell-glass, and, when rooted, are potted singly into forty-eight sized pots, to grow large enough for working. Seeds are somewhat scarce, but plants are easily raised from them; they only require to be sown and placed in the green-house, where they must be kept moderately moist. The young plants may be potted off, and, to hasten their bloom, as soon as any promising one has wood large enough and ripe enough, work it on a strong stock; you will soon see whether the variety be worth saving.

Carnation.—Many and elaborate as have been the treatises written on the subject, all that is good for anything in the best of them may be comprised in a few words. The soil may be loam, leaf-mould and cow-dung, if you have the loam clear; but if you have rotted turfs, which are by far the best, two-thirds that and one-third cow-dung brings you to the same thing, because the leaf-mould is already in the loam. If this mixture appear too strong and adhesive, temper it with a little silver sand. This stuff should lie together, and when used run through an iron sieve that will just about let a hazel-nut through. In this soil pot your plants in April, first convincing yourself there are no wire-worms in it. They now require only proper care with regard to water, and a strong neat stake in each pot, for the purpose of tying up the rising stems; allow but one stem to each plant; and, as soon as you can well get hold of the buds, reduce them to three; or, if it be a weak bloomer, to two. When these buds have swelled full, and before they burst, tie a ligature round each pod half way down, and as soon as the calyx parts, and you get hold of the ends, tear down the divisions of the calyx as low as the tie, that there may be no resistance to the opening petals. As the petals develop themselves, gently bring the guard petals down to their places, to form a dish, as it were, for the other petals; bring down the next largest over the place where the outer ones join, and continue doing this with the remaining row. In any blooms you are to show, remove all deficient or run petals; for, if you leave them until the show-day, they may be overlooked. The grass of the plant should be layered when the best of the bloom is over; they will root quite soon enough. In September the layers may be cut off and potted in the loam formed of rotted turfs, with no dung: let the pots be forty-eights, and the plants two in a pot. All through the winter they must be kept very dry; the floor upon which the pots stand must be dry and hard; stone, slate, or tile flooring is the best, laid sloping a trifle, that the water which passes through the pots may run away instead of soaking in. Let a common frame and light be over them, and give all the air they can have in mild dry weather. In short, winter them any way you please, so that they are free from damp, but one-half the Carnations that become spotted in the foliage and mildewed, get it through the damp which arises from the ground, or ashes, or other material in which they stand. They would be infinitely better on a dry shelf in the open air, than in some of the pits and frames that we have seen shut up, with six inches of ashes that are not dry the whole winter through. In case any of the grass is too short to be layered, they may be piped like pinks, and there are some who think they make better plants than layers. This is a mere fallacy.

Chrysanthemum.—A flower which, in its present state, is very deficient in all qualities requisite for perfection; no scent, but a disagreeable one; no form in one of a hundred; and for the most part disagreeably lanky in their growth, and naked on their under or lower sides. This has to be compensated for by their bloom, which comes when nothing else can be got in bloom, or at most very little else. The cultivator has to counteract as much of the evil as he can by the mode of treating them. When they have advanced in growth considerably, and got lanky before they show their bloom, the top three joints must be taken off, and, with the aid of bottom heat, under a hand-glass, shaded from the sun, these tops may be struck rather rapidly. When potted out, they may be stood upon some hard floor out of doors, where the worms cannot get through into the pots, and there left to grow themselves up to the blooming point; they will be found very dwarf, and may be shifted from their first to their second pots, and removed under a frame, or into the greenhouse, to perfect their flowers. The old roots, or rather old stools, may be turned out into the open ground to grow stock for propagation, or perfect their flowers as garden or border ornaments. The depriving them of their tops makes them push side shoots, which bloom in a late season, or which may be again taken off and struck. After blooming, the plants may be cut down completely, and when they shoot from the bottom, the plants may be parted, to go through the same operation the next year. The best soil for the Chrysanthemum is turfy loam and peat, and if there be not the entire turf rotted into the loam, add leaf-mould.

Cineraria.—The culture of this now favourite flower has become fashionable, chiefly because it is approaching that style of flower which has been laid down as the perfection. Those who remember Waterhousiana, and some other of the early, large blooming varieties, will probably remember joining in the hopelessness with which almost every florist contemplated any approach to the circle, yet how nearly is it approaching the standard! The seed of this plant, like many others of the syngenecious tribe, has a woolly or downy wing, by which it may be transferred from one place to the other, and, were it a hardy plant, it would be as troublesome a weed as the common groundsel. This seed should be rubbed in a little dry sifted soil or sand, to separate it well, and then be sown thinly in boxes, pots, or seed-pans, in the month of April or May, using light soil, composed of turfy loam and peat in equal quantities, rubbed through a coarse sieve. These pans or boxes should be kept in a frame, and occasionally watered, to prevent them from drying up, and when the seed is up, it should be shaded from the sun for a few days, but it must be by a very light shading material, such as thin calico or white paper. As they advance in size, they should be pricked out, a few in a pot round the edges, there to grow until August or September, when they should be potted singly, and wintered in a dry frame or pit. In potting them off, there should be a good drainage, and perhaps there is no better than filling one-third of the pot with crocks and pieces of charcoal. In the early spring they will begin to flower, and, for the sake of their bloom, may be placed anywhere that flowers may be wanted. Among these seedlings, select such as approach nearest to the standard laid down, and give them a pit to themselves. The seed from these will produce others yet nearer, and a very few seasons will produce much better than we yet boast. These plants almost propagate themselves: if earthed up well, the side shoots are certain to root, and only require separation. If, however, you require to increase by cuttings, take them off small, and, striking them in sand under a bell-glass, as soon as they are rooted, bring them on like seedlings, first, three or four in a pot, and afterwards, in single pots. If specimen plants are wanted, which, by the bye, never look so well as the plant with a single truss, they must be shifted from small pots to larger as often as the roots reach the side, and the blooms be picked off as they rise, to throw strength into the plant, until it is as large as you wish it; but a Cineraria should never have heat unless actually required to be forced. It weakens the shoots, and takes away much of the brilliance of the colour. It even does worse than this, for a tolerably well-formed variety may, by drawing and forcing, be totally spoiled as to form. They require a good deal of air at all times, and should never be kept close in mild weather.

Crocus.—There is no culture that will spoil a Crocus: it is as hardy as a stone, and will grow in any thing and anywhere. There is hardly a flower subjected to so much and such varied hardships. It is a common plan to assign to a Crocus a place as near the box-edging as possible, where the ground is completely drawn of everything worth a plant's having, yet we see them performing their humble task of enlivening the otherwise dreary border before aught else condescends to aid us, if we except the Snowdrop, and one or two other less brilliant things. The Crocus will thrive in light rich earth, and propagate rapidly; it should be set three inches below the surface, and be taken up every third year, as being then as thick as ever they ought to be. There are thirty or forty sorts in some of the catalogues, but none, except the broad petalled ones, ought to be bought now, and the properties will soon be nearly realized.

Dahlia.—Although volumes have been written on the culture of this flower, there is scarcely anything more easily done with common attention to a few leading rules. The plants are purchased in pots which have become full of roots. Dig a hole in the ordinary garden, turn out the plant, drive in a stake, and put the pot on the top of it, as a trap for earwigs. Here the plant needs only to be well watered occasionally, and the ground well soaked. As the plant grows, drive down additional stakes, to which the strong side shoots should be fastened as they grow. The flowers require protection from the wind and sun. This is accomplished many ways. If you desire to grow for exhibition, there must be some preparation of the ground, unless it be rich in itself; but there is a greater evil in having the ground too rich than too poor. The pruning of the Dahlia has been carried to excess; all that should be done is the removal of branches that are in each other's way, or in the way of flowers, and the removal of the remainder of the buds on a shoot on which you are growing a bloom for exhibition. It is the fashion also to cover up choice blooms. They never can travel so well, nor be so bright in colour, when kept close shaded or dark, as when they grow in the light and air. The propagation of the Dahlia for our own purposes of growing is very different from propagation for sale. We always let the shoots develop themselves on the dry root, and break them off to strike in bottom heat, one in a pot; but, if we did not want more than two or three strong plants, we should be inclined to let the shoots come out to show themselves, and part the tuber into as many as there were eyes, or as many as we wanted of the best; these might be potted in large pots, that is to say, pots large enough to take in the piece of tuber when cut away a little, and in those pots remain till planting time. Of the many ways of preventing devastation by thrip, earwigs, slugs, caterpillars, &c., we practise syringing all over, continually examining the pots placed to entrap them, laying bean-stalks, which are placed at the foot of and among the branches of the plant, and persevere in closely watching, and destroying the vermin in the early, as well as the late part of the season. Dahlias to be flowered in their pots, should be first struck in sixty sized pots, from these removed to forty-eights, sinking them as much as they will sink by the change, and as soon as they can bear all the air, let them be placed in the sun, but they must be watered well; at the next change to size thirty-two pots; still put the plant as low down as you can, so that it can be rendered very dwarf, and it will flower well.

Fuchsia.—There is very little difficulty in growing the Fuchsia in perfection, not as we see them at exhibitions now, but as they ought to be, compact, neat, well-furnished plants, blooming all over, and full of leaf as well as flower. The soil best suited for this, is three-fourths turfy loam, and the other fourth peat. If you have none but plain loam, without the turf having been rotted in it, in quantity, let it be half loam, one-fourth leaf-mould, and one-fourth peat. In the absence of leaf-mould, use dung thoroughly rotted in mould. All the Fuchsias we have seen have been grown too fast for their beauty; and it may be safely taken as a rule in plant growing, that if they are excited too much they grow thin in foliage, the leaves being further apart, the branches thinner, the plant more naked, and, in spite of all that can be done, more ugly. In a large sixty sized pot of this stuff, well drained, put your small plant or struck cutting, and let it be placed on a front shelf in the green-house, or near the glass in a conservatory, or, for want of either, in a pit, and give air on mild days. As soon as the roots reach the sides of the pot, it may be changed to one a size larger. If the plant grow pyramid form, and handsome, let it go on; if it makes a long straight shoot, and gives no indication of side shoots, it must be shortened; but it will be a more handsome plant by far if it grow naturally, and throw out side branches, without being checked at top. If any of the lateral or side shoots grow too vigorously for the rest, they should be checked at once by shortening them. If the plant show bloom before it be grown as you wish it, the buds may be all picked off; but, generally speaking, you should not depend on one or half-a-dozen plants of a sort, so that, if one should bloom out of season, it may be taken into the dwelling-house, or used as an ornament, though it were very unfit for exhibition. The Fuchsia only requires to be grown in the natural way, without more heat than the green-house, or even in a pit without any, to be handsome, and wonderfully different to the things shown now, which, in addition to the natural coarseness of a great many, are rendered doubly repulsive from their rank growth. It is the curse of Floriculture, that size, even to vulgarity and coarseness, gets rewarded by Horticultural Societies. The seed of the Fuchsia is contained in a pulpy berry; these may be squeezed and the pulp removed by washing, when the seed, after drying, may be sown in pots or boxes, placed in the green-house in April, or when it is gathered. We prefer April, as the seedlings have not then to get through the winter in their young state. When they are large enough, they may be potted out in small sixty sized pots, and great attention must be paid to the watering, as small pots soon dry up. Continue shifting them as often as the root touches the sides, and let them have all the sun until the height of the bloom.

Geranium.—The cuttings of Geraniums may be struck all the year, even in winter time if it were necessary, but they are as well taken after the flowering is done as at any time. They will strike under a glass in the common border. When struck they may be put into large sixty sized pots in the loam formed by rotted turfs, turfy peat, and decomposed dung, in equal parts, well mixed. If this appears too adhesive, silver sand must be used to make it less so, but not more than an eighth of the whole bulk. These pots must be placed on a hard ground, or boards, or slabs, where no worms can get into the pots; attend constantly to watering, and as soon as they fill the pots with roots, or rather, as soon as the roots will reach the side of the pots, shift them to twenty-fours. If the plant grows handsome, let it grow its own way; if it is making too long a shoot, shorten it, but in this pot let it remain all the winter, and flower in spring. A little liquid manure will be of use as the flowers are opening. Allow but one truss to perfect its bloom if you want to see the flower at its best; but it will not materially disparage it if you allow all the trusses that come naturally to perfect their flowers. In the winter the Geranium only requires to be near the glass, and to be protected from frost. The forced ones may be increased in temperature; but the forcing, when it is done ever so well, is but a miserable substitute for a well-grown plant in season. In the event of being attacked with green fly, syringing and fumigating must be resorted to; and, when plants are being forced, they should be frequently syringed all over the foliage before closing the house in the evening. The seed of the Geranium may be sown the greater part of the year, but early spring is the best; they may be sown in pots, or boxes, or pans, thinly, and covered slightly. They will be none the worse for a little heat to start them, but the green-house is the proper place for them. As soon as they have become large enough to prick out, put four or five round the edge of a large sixty sized pot, and let them grow a month before they are potted into single pots, when they may be placed one each in a forty-eight sized pot, and put out of doors on some hard substance, to prevent the intrusion of worms, and, when they fill the pots with root, shifted to twenty-fours. In these they may be wintered in the green-house, and flowered in the spring. The sole reason why seedlings are rarely seen so good after the first year, is the ridiculous mode of growing them with so many branches and trusses of flowers.

Hyacinth.—In the state in which bulbs are imported from Holland, almost every soil, situation, and temperature will bring a bloom; hence we see them variously grown, in earth of all sorts, pots of all sizes, wet sand, and water. The denizen of a thickly crowded neighbourhood, where there is a deficiency of air and light, will have his Hyacinths in glasses, and in due time a bloom of some kind or other; nor is it certain whether some varieties do not in all respects succeed as well in water as in any other medium. To grow them in glasses, the bulb should not fit the bowl of the glass tightly, but should allow air all round it; the water should touch the bottom of the bulb, and the glass be placed in the dark for two or three weeks; after this, they cannot have too much light; but it is questionable whether the bulbs do not grow better in opaque vases than when the roots are exposed to the light. The water must be constantly filled up as it is absorbed by the roots, and should be occasionally changed altogether, in doing which the bulbs should be disturbed as little as possible. When they are grown in pots, those made on purpose should be used: they are deeper and narrower than usual. The soil should be the loam of rotted turfs two-thirds, and sand one-third, the bulbs should be two-thirds in the soil; but as the vigorous growth of the roots will frequently push up the bulbs, it is usual to bury them two or three weeks in tan, sawdust, or sand; they are then taken out and placed where they are to bloom. They are easily forced in a common hot-bed. They bloom in the highest perfection out of doors. They only require to be planted on light rich soil, such as that for potting; and as the frost will injure the flower, which comes early, they should be protected like Tulips, though they are thoroughly hardy, and make a splendid show in the common borders. To raise them from seed, it should be sown thinly in a common garden frame in the autumn; and as they come up, towards the spring, they should be carefully watered until the foliage dies down, when they should be taken up, and another bed be made on purpose for them of the stuff used for potting, and the bulbs be replanted three inches apart, but have no water, until October, or November, when they begin vegetating rapidly; the lights should be taken off in mild weather, and only be placed on at night, and be kept on during frost. As they advance in growth they require watering regularly, so as to keep the soil from drying; the bulbs will swell greatly. When the foliage has once died down, they may be taken up and replanted in a bed without the protection of glasses, six inches apart, and this management be continued till they flower, when the bad may be given or thrown away, or made common flowers for wildernesses, and the best carefully planted, year after year, to make offsets, and so propagate the varieties. The bulbs should never be disturbed until the foliage is dead, when they should be laid by in a dry cool place till planting time, which is from September till the end of November; but the middle of October is best.

Narcissus.—The Narcissus requires but little care in blooming roots which are imported, but if we intend to grow from seed, or from the offsets which every year come off the old roots, some attention to soil and situation is wanted, so also does the raising of new varieties. The roots, or bulbs, as they are imported from Holland, are grown up to the size which is considered perfection for blooming; that is to say, if they were kept in another season, they would bloom their best in the grower's hands, and not be so fit to export the next year. To grow them from this perfectly developed state, or rather—for it is nothing else—bloom them, a thirty-two or a twenty-four sized pot, filled with light rich sandy soil, one-third loam, one-third decayed cow-dung, and one-third turfy peat, with some good crocks at the bottom to form a complete drainage, is all that the grower wants. They should be potted with nearly the whole bulb under the surface of the soil, which should be as high as the top edge of the pot. These should be potted in October or November. In a month or so the pots may be buried a few inches below the surface, in the ordinary garden, or they may be placed together in any frame, or box, or even in a corner of the ground, and covered with sawdust, coal ashes, or old tan; when they have been there a month the pots may be taken out and cleaned, and the surface of the soil cleared of whatever covered it, and placed in a cold pit, either to grow without forcing, or to be withdrawn, a few at a time, for forcing. Air on fine days, and perfect protection from frost, are required, nor can they be too near the glass. One-half the bulbs bloomed early in spring are drawn up for want of light; for the quantity of light should always be in proportion to the heat. By common attention they will bloom in fine order, whether forced in the green-house or stove, or in a common hot-bed, or the room of a dwelling house. If the Narcissus be planted in the open ground, and left to itself, it will, in its proper season, come in the finest order, and nothing looks much better, in patches of half dozen, than the different varieties. Seed is sown in pans, or boxes, or large pots, and very thinly covered, protected from the hot sun and heavy falls; and when the leaves have died down, taken up and stored in boxes or bags for the remainder of the season, till October; they may then be planted in beds of loam and dung, well incorporated, in rows, three inches apart, taken up when the leaves dry, and planted the next year, six inches apart, in rows, and one foot from row to row, where they may be left till they bloom. Offsets should be planted out in beds of the same kind of stuff, and taken up every year as soon as the leaves turn yellow, until the roots are large enough; in the mean time, if a bloom rises, pick off all the buds but the top one, which must alone be allowed to open.

Pansy.—The Pansy, like all other florist's flowers, thrives best in rich ground; but it grows in nothing so well as a compost that will do for everything. Turfs cut rather thicker than they would be for laying down, and allowed to rot in a heap, form the best loam, from the quantity of vegetable mould formed by the decayed vegetation; this alone would grow florist's flowers in perfection, but as it will be found sometimes too adhesive alone, one-half of this, one-fourth turfy peat, and one-fourth cow or horse dung, rotted into mould, will be found as good as any compost that can be made for growing them in pots. If, however, you have a garden whose soil will grow vegetables, and other flowers moderately well, put a good dressing of leaf-mould and rotten dung three inches thick all over your bed, and fork and mix it well with about six to nine inches of the soil, incorporating these well together. The Pansy is frequently recommended to be grown in shady borders. There is no occasion for this. In open situations they are less likely to be infected with slugs, and they can be shaded from the hot sun as wanted for exhibition. The flowers come larger and finer in open situations, and only require shading during the highest heat of the day. By keeping the Pansy well earthed up, you may always obtain side shoots to propagate from, and they are far better than tops. You will also either find them already rooted, or so disposed to root, that they strike immediately. The cuttings will strike well in the same kind of stuff the plants are growing in, covered well with a hand-glass, and a paper or mat, or piece of cotton, to keep off the heat of the sun. They should, after striking, be carefully planted out in fresh beds, or potted off, according to your wants. Potted plants should be shifted from the small ones they are first placed in, as soon as their roots reach the side, into pots size twenty-four, in which they will bloom nearly as large as in the open ground, and those who have kept them in pots over the winter have found that they could depend on them for more than half their flowers at the early shows. They must be wintered in the larger pots; and, if they have not had time to establish themselves first in the small ones, they must be potted from the struck cutting at once into the size twenty-four pot, in a common garden frame and light, on a dry bottom. They will stand the winter well, covering them with cotton or mats—the former is the best—from severe frost only. The Pansy is the same in all seasons; it will strike from January to December, and to keep a constant succession of bloom, you have only to examine your plants every ten days or a fortnight, and take off side shoots close to the plant before they grow too large. These will strike, and may be put into new beds as soon as they have rooted. Top-dressing, with leaf-mould and rotten cow-dung in spring, or watering with liquid manure in the dry parching weather, will be found beneficial. Seed may be sown from April to July, in pans or boxes, or broad pots, and carefully watered and shaded while young. As soon as they are large enough to handle, they should be planted out six inches apart. In the winter time, seedlings and established plants will be alike preserved from a good deal of the ill effects of frost, by a covering of peas-haulm. April, May, and June sowings will bloom before winter, and choose none for propagation that do not in some points approach the standard.

Petunia.—This was, perhaps, at one time, the least promising of all the tribe of flowers. It was a five-winged, deeply divided flower, with an extremely pointed petal, very flimsy, scarcely able to maintain its form in any degree, and altogether, in some people's eyes, a hopeless subject; time and proper directions have done much towards improving the form, and there are some which scarcely have a fault, except the thinness of the petal. Perseverance will overcome this, and we shall see, by and by, as much advance in this feature as in that of form. The culture assimilates a good deal to that of Verbenas, and the striped varieties of the Petunia are better in poor soil than rich. They strike freely from cuttings under a hand-glass; they bed out in any kind of soil; they will grow and bloom, after some fashion, in any sized pot; and when they are undisturbed, they are literally covered with flowers for months. They, like the Verbena and the Pansy, grow extremely well on rock work, where it has been properly made, and in all kinds of places fill up their whole space with a profusion of blooms. They are raised from seed by sowing in April, in pans or boxes, and by the time they are large enough to do anything with, they may go out in an open bed, or, if you have pots enough, pot them singly in thumb pots. From these, when full of roots, they must be shifted to large sixties, and in them be wintered; otherwise, if planted out, they have to be potted up, or frames and glasses placed over them.

Pink.—Several years since the Pink was more cultivated than it has been more recently; but the shows of the last two or three years have given an impetus to the cultivation, and, in all probability, it is destined to make great advances even during the present season. The culture of the Pink, as a stock plant, is the least difficult of any; but the preparation for showing requires constant watchfulness and close attention. Plant the rooted pipings in a bed of loam and dung, where the garden is well drained, and they will grow and give increase, and you may take off all the bottom shoots, or grass, as it is called, and strike them under a hand-glass, with as little attention as anything we know of requires; but if you cultivate for show, you must first begin by reducing the blooming stems to one each plant; then you must reduce the buds on each to two, or, at most, three. When they are swelling, so as to approach the bursting of the pod, you must tie a piece of bast matting, or some other handy ligature, half way up the pod, and tear down the calyx to the tie. As the larger petals are developed, they must be brought down neatly, to form the bottom row of petals; as the others open, they should be brought down over the joins of the first row, and the third row be brought down over the joins of the second; the rest of the petals should be made to form a crown. In fact, all the difficulty lies in the preparation of the flower for show, and not in the cultivation, which is as simple as can be. People who exhibit must be careful of run petals, split petals, and flowers two of a sort. It is aggravating to be in all other respects right, and to commit some little trumpery oversight that throws us out altogether. Again, the bast matting must be taken off; if one of them be left on, there is an end of the chance; and many a stand of noble Pinks have been thrown out, because one of the ties had been left on till the last moment for fear it should split, and then, though fully intending to remove it, the excitement of the last minute put it all out of the exhibitor's head.

Polyanthus.—The Polyanthus requires good strong, but not heavy loam—that from rotted turfs is the best; two-thirds this, and one-third rotted dung, will bring them to perfection. Many of the successful exhibitors simply plant out the Polyanthus from six to twelve inches apart, in beds of this stuff, and on the day of show pot them up for exhibition. If they are to be grown in pots, size twenty-four is the proper kind to keep them in, but generally they are far better in the open ground. The treatment of the Auricula, in all other respects, will do for this flower, not only with regard to old plants, but seedlings. It is propagated by parting the roots, and but one truss ought to be allowed to grow.

Ranunculus.—The Ranunculus is what the florists call a teaser. A man fancies he has just got into the way of conquering all the difficulties, and all at once he finds he has as bad a season as his neighbours; and the most experienced man has been the victim of a total failure, without being able to account for it other than an unfortunate angler accounts for catching no fish. We have seen and admired many splendid beds one year, and the next seen little or no bloom; and yet, to all intents and purposes, the treatment similar as the grower could make it. Perhaps the very best thing they can be grown in is rotted turfs without dung; proper turfs rotted into mould are the same as half loam and half leaf-mould. But then the danger of this soil consists, nine times out of ten, of being infested with the wire-worm, which there is no dependence in eradicating except by picking them out, a job of no slight labour in a large quantity. It has been a practice to use cow-dung, well rotted, and to put a good layer of it about a foot under the surface; but nothing beats fresh mould formed of rotted turfs. A writer, not long since, recommended saturating the ground (every six-inch layer, as the bed was filled up) with new cow-dung, thinned with water to the consistence of cream. A nice mess for a cleanly person: of course, the unfortunate people who followed this advice have to thank the author for a considerable reduction of stock. If a few hundred turfs can be got, and be laid together to rot, and this be chopped up with half its weight of thoroughly decomposed cow-dung, and be laid together a good twelve months, chopped about occasionally, and then used, there could hardly be a better thing; but people have generally got the soil they are obliged to use, and they merely prepare it as well as they can. Richness and lightness are considered indispensable, and we know of nothing better than old dung perfectly rotted to mould. Mix this with the earth of the bed, if you can do nothing else, and plant the roots in drills, covering up a clear two inches when patted down with the back of the spade. When they are up, stir the earth between them, bruise the lumps, and press the earth all close down to the roots. Ranunculuses require plenty of water; when they begin to show colour they must be shaded from the sun, as it would certainly destroy their beauty in a few hours. When the prime of the bloom has gone, you may let them have all the weather; and if you save any seed, be careful to look after it closely as it ripens, or it will be lost. Sow it in pans or boxes, in a frame, and do not disturb it till it dies down. The next year the young roots may be planted six inches apart, and will give you a much stronger bloom than old roots.

RHODODENDRON.—The Rhododendron has advanced wonderfully and properly in public estimation, and a few hints as to peculiar points in its culture may not be out of place. First, looking out of doors at those which grow without protection, a general complaint is, that some years they have no bloom. There are certain matters an attention to which will ensure it every year. As soon as any flower, or rather bunch of flowers, is past its prime, it should be taken off as close up as possible to the under flower, because, as there are embryo branches in every part of the stem, the strength of the plant will be immediately devoted to the production of some of them; whereas, if the seed-pods are left to swell, they require the energies of the plant, and take it from new branches. Another point to remember is, that from the instant the bloom buds begin to burst, the plants should be watered copiously, and this should be continued, every four or five days, until the bloom buds have set again for the next season. Even the rain may not reach the roots, as these plants are of themselves such a complete cover to the ground. Rhododendrons, however, when planted in a hollow, rarely miss bloom or require water. The proper soil for the Rhododendron is a turfy peat, with a little turfy loam, three parts of the peat, and one of the loam, and wherever this kind of soil abounds, they do well; witness Bagshot, Knap Hill, Beddington Park, Wimbledon, &c. In growing the plants of the half hardy and tender kinds in pots, the same description of soil is used; the watering is increased at the same seasons of growth, and the shifts from one pot to another take place at the periods when the pot is full of roots; but the shift should be just before the buds swell for bursting the bloom. Seed should be sown in pans, and the plants pricked out as soon as they can be well handled, three or four in a small forty-eight sized pot, or a large sixty; when they have attained sufficient size, they may be potted singly, if tender or doubtful, and have the protection of a frame all the winter. They may be grafted or inarched, like the Camellia, and, if desirable, budded; but as one eye and an inch of wood is enough for a graft, that is the best mode. The handsomest grafted plants are made from the ends of shoots. If seedlings are hardy, they may be bedded out six inches apart one season, twelve inches the next, and there they may remain to bloom. Layering is also a favourite mode of propagation, though it takes a year to root properly.

ROSE.—The Rose will flourish in a rich loam better than in anything else. Were a meadow turned up, it would be the best adapted for the success of this beautiful shrub; but it should be remembered that a large proportion of our Roses are budded or grafted on the common briar, which will grow in any kitchen garden, and thrive in any soil. In most cases the Rose will grow well in ordinary soil for a year or two; for the head does not require half the nourishment that the stock would yield; and it is too much the practice to cut in every branch to one or two eyes from the first. This should not be done until the head is as large as it is required. In general, the Rose-planter may put a spadeful of well-rotted dung in the hole in which he is going to plant, and mix it well with the other soil; the roots should be pruned wherever they are damaged, and all the bruised ends be cut smooth; the plant should be no deeper in the ground than just to cover the roots. Dwarf Roses, on their own bottoms, thrive well anywhere, and on almost any soil, with the addition of a little rotten dung. One point in the culture of Roses should be attended to especially—pruning, and this should be done so as to bring them into the form required, or nearly so, before they are cut in too hard, which nearly every standard Rose is subject to now. Indeed, it is ridiculous in the extreme to preserve, as a majority of growers do, the form of a common moss, year after year, instead of encouraging a handsomely formed head, which should be, when perfect, as large in diameter as the stem is long. Climbing Roses are of various kinds, and these for the most part should have only the weak roots cut out until they fill the place allotted to them; they may then be spurred or pruned almost any how, so that they be not allowed to get too thick of small wood. Roses from seed afford the highest gratification; for while it is nearly impossible to produce worse than three-fourths of those in cultivation, the very best are likely to be beaten by the cultivators of the day. Let the seed be sown in a common frame, say in April, the berries having been bruised, and the seeds got out, during the winter months. When they come up they may be thinned, and those taken away be planted out in another frame. Keep them clear from weeds, and let them have plenty of air; while very young they should be shaded in the heat of the day. Any that promise from their foliage to be new, may be hastened in their bloom by being budded or grafted on healthy stocks; but some will bloom in two, and most of them in three seasons without any aid. The budding of a Rose is a very simple operation. It is done by shaving off a thin piece of the wood with a leaf to it, and opening the bark of the stock, which is done by slitting it about an inch along to the wood, and making one slight cut across, and then lifting it up on both sides, so as to tuck the piece with the leaf to it underneath, and adjusting it so that the leaf comes to the place where the cross incision is made; bind the bark of the stock down to it with a piece of worsted or bast matting; and if the weather be hot and dry, put some loose damp moss on it, laid very slack, just to keep it there a few days, and occasionally damp it. The bud will unite and grow, and then all the other growth of the stock should be cut away; this is done after Midsummer upon the green branches of the stock. Grafting is taking a piece of the wood of the variety to be propagated, and cutting it sloping, or wedge fashion, or slitting it like a clothes' peg and making the stock to correspond, then splice them, and they will unite; this is done in February or March, before there is any growth.

Tulip.—The Tulip is one of the most hardy plants cultivated in the English gardens. No frost seems to kill it, yet there is no plant the bloom of which is so delicate and so easily affected. The common plan of cultivation is to dig out the space intended for a bed at least two feet deep; to fill this with fresh maiden loam, and so avoid dung; to plant, in November, the tops three inches under the surface; to allow the bed to have all the rain and frost until the Tulips spear above the surface and begin to open their foliage, and then to cover up with hoops and mats, or cloth of some kind. When they begin to show colour, they should have no more sun, excepting early in the morning and late in the evening. They should have as much air as possible, consistent with this; therefore, the cloth for shading them should never cover them more than just enough to keep off the sun. They should not be taken up until the stem has died down at least half way, and this will be promoted by picking off the seed vessels after the bloom is gone. They should be carefully laid by in the dry, until planting time again. All small offsets should be planted a month, and, if very small, two months, before the blooming roots, as they are apt to dry up and perish. Tulip beds always look best when planted in duplicate, that is to say, three pair of flowers in a row: one and seven alike, two and six alike, three and five alike; and so far as this arrangement can be carried out, it should be done. Seed of Tulips may be sown as soon as it is ripe, or be kept till the spring; but if you have glass protection, sow it at planting time, in pots in a frame. If you have not glass protection, sow in April, and put a little litter of some kind to keep off the worst frosts. These will keep growing till the foliage goes off brown or yellow, when the small bulbs should be carefully taken up, and be planted again in October, or even before. The seedlings must be planted the same as established flowers, until they bloom, when every one with a foul bottom, a pointed, or thin, or narrow petals, so that they would gape when fully opened, should be thrown away and the others saved. From the time seedlings first come up until they bloom, each bulb, with its own offsets, should be kept separate, so that, when they bloom, the offsets of the worthless ones should be thrown away at the same time; for if offsets are allowed to mix, you never get rid of the bad ones. When any one of the many that will accumulate from one bulb breaks, if you find it break badly, throw all belonging to it away, for it is not worth while to be troubled with even secondary things.

Verbena.—The very best of the old kind of Verbena was good for its use as a plant. We allude to the Verbena Melindres, the brilliant scarlet creeping thing, which covered a large space in an incredibly short time, and which was, without exception, the best plant for bedding out in fancy gardens or clumps. Nor did this require any particular culture. If the ground was well drained, the Verbena required but putting out at six inches or a foot apart, and the branches to be directed the way they should go, to fill the space allotted to them. The present race of Verbenas, for the most part, lose the creeping property, and require growing on a trellis, or they assume a shrubby appearance, and, although pretty, do not aid us in a flower garden the way that Melindres does; they are, in fact, becoming a different race of flowers; and yet, if we had some of the various colours of the dwarf or creeping habit, they would be invaluable. There is nothing very particular required in the culture of the Verbena. It may be grown and bloomed early in a small pot; or, by picking off the early blooms, and shifting it to a larger sized pot, the plant may be increased to almost any size. The truth is, the Verbena is not, properly speaking, a pot-plant; it is out of its place when anywhere but in borders, beds, and clumps, and cut to show in bunches in collections. We do not say that pots might not be made to look pretty well; but give us all the colours of the Verbena in the borders till the frost cuts them off. They thrive in loam and dung; will keep best through the winter in loam and peat, instead of loam and dung; and they must not be too wet. Cuttings will root like weeds if their branches be laid down with a stone upon each joint, and every one will have roots. They seed freely, and come up like anything wild. They should be pricked out into the smallest sized pots as soon as they can be well handled; here they may stop till they bloom, or be placed out in larger pots, or be planted out in the ground in June, where they must be carefully tended. Those which do not assimilate a little to the properties should be thrown away.

NEW SEEDLING PELARGONIUMS.

THE annexed is a descriptive list of the seedling Pelargoniums that have been exhibited during the present season at the Metropolitan exhibitions.

DESCRIPTIVE LIST OF SEEDLING PELARGONIUMS.

Adonis, (Stains,) 1845.—Rose colour, with clouded top petals, and white centre.

Alba grandiflora, (Gaines,) 1845.—White, with dark cloud and pencilling.

Alonza (Robinson,) 1845.—Light rose, with dark blotch, and veiny markings.

Annette, (Hoyle,) 1845.—Light rose colour, with a moderate sized dark cloud.

Arabella, (Beck,) 1844.—Lively rose colour, with dark cloud; a large portion of the centre of the flower is white; the flower is large and good. It received prizes at the Royal Botanic Society and Horticultural Society.

Archdeacon of Sussex, (Cock ?) 1844.—White, with purple clouding on the top petals, edged with white.

Ariel, (Forster,) 1845.—Blush pink, top petals with a dark cloud, and blush margin.

Armida, (Forster,) 1845.—Rose pink, the top petals with a dark cloud, and narrow margin of pink.

Aspasia, (Forster,) 1845.—Rose colour, with clean white centre, and dark clouding on the top petals. It received a certificate at the Royal Botanic Society.

Augustus, (Hoyle,) 1844.—Purplish rose, with the top petals clouded.

Aurora, (Beck,) 1844.—A very beautiful variety of good qualities; the colour is a rich light rosy crimson, the top petals being nearly covered with a dark cloud, and edged with the rose tint; the centre is pure white. It obtained prizes at the Royal Botanic and Horticultural Societies.

Aurora, (Hoyle,) 1845.—Rose colour, with the top petals clouded with dark colour, and margined with rose; the centre pale, nearly white.

Bellona, (Beck,) 1844.—Purplish rose, with dark clouded top petals, edged with rose. Obtained a prize at the Royal Botanic Society.

Bride, (Stedman,) 1845.—A small flower; white with small dark purple spots.

Brunette, (Stedman,) 1845.—Small and rosy coloured.

Caliph, (Beck,) 1845.—Bright rosy purple, with top petals nearly black. It obtained a certificate at the Royal Botanic Society.

Carew, (Robinson,) 1845.—Rosy pink, with a dark cloud, and light centre; flower small.

Celia, (Forster,) 1845.—Blush pink, with dark cloud, and light margin.

Chieftain, (Kinghorn,) 1845.—Scarlet red, with lively looking small brownish spots or blotches on the top petals; chiefly useful from its colour.

Chimborazo, (Hoyle,) 1845.—Deep crimson, something of the same colour as Mount Ætna, but larger though less brilliant; the top petals are clouded with a dark, nearly black blotch.

Competitor, (Beck,) 1845.—Bright rose coloured, with very dark top petals, nearly black. Obtained a certificate at the Royal Society.

Conflagration, (Henderson,) 1845.—Light scarlet red, chiefly useful for its lively colour.

Conquering Hero, (Conway,) 1844.—Rose, with dark clouding.

Cupid, (McOnack,) 1844.—Blush, with dark clouded top petals, shaded off to a rosy edge.

Dawn of Day, (Beck,) 1845.—Pink, with a small feathered clouding on the top petals.

Desdemona, (Beck,) 1844—Very distinct in colour; the upper petals very dark rich marone edged with pink, the lower ones pale blush, strongly contrasting with the upper; the habit is excellent, and the plant is a very profuse bloomer. Obtained a prize at the Horticultural Society.

Duchess of Nemours, (Robinson,) 1844.—Veiny rose.

Duchess of Richmond, (Henderson,) 1845.—Pink, with veiny blotch of dark marone, on the top petals; second rate.

Edith, (Bainbridge,) 1844.—Rose, with the top petals clouded with dark marone, and centre white.

Elvira, (Cock,) 1845.—Blush, with white centre, the top petals clouded, with pink margin.

Emperor, (Franklin,) 1844.—Blush, with small dark spot, and crimson cloud.

England's Queen, (Kendall,) 1844.—Pale coloured, with crimson veins.

Essex Pet, (Golledge,) 1844. — Veiny rose.

Euclid, (Catleugh,) 1845.—A large loose reddish coloured flower.

Fulgens, (Stedman,) 1845.—Bright rosy red.

General Bonham, (Golledge,) 1845. — Blush, clouded, a good deal in the way of "Miss Holford."

Geraldine, (Forster,) 1845.—Scarlet red, with small dark blotch : showy and pretty.

Gertrude, (Catleugh,) 1845.—Blush, with a dark irregular cloud on the top petals, centre white. Obtained a certificate at the Royal Botanic Society.

Gipsy King. (Henderson,) 1845.—Red, the top petals with dark clouding, and bright margin ; pretty.

Gipsy Maid, (Hoyle,) 1845.—A curious and rather pretty variety, of a light rose colour ; the top petals clouded, and the lower ones each marked with a smaller veiny blotch of the same dark colour as the clouding.

Gulnare, (McOnack,) 1844.—Blush coloured under petals, with white centre, and very dark top petals. Obtained a certificate at the Horticultural Society.

Hebe's Lip, (Beck,) 1845.—An excellent variety : upper petals rose, with dark marone cloud, lower petals pink, with blotch of crimson. It obtained a certificate at the Royal Botanic Society.

Heidos, (Hoyle,) 1844.—Blush, with dark clouded top petals ; the lower one veined with rosy pencillings ; a pretty variety.

Isabella, (Hoyle,) 1845.—Light rose colour, top petals nearly covered with a dark clouding, with a rose coloured margin ; the centre is pale, nearly white ; lower petals rosy purple. It obtained a certificate at the Horticultural Society.

Jeanie Deans, (McOnack,) 1845.—Light blush red, with irregular clouding at top.

Juno, (Beck,) 1844.—Rose : the top petals with a dark cloud edged with rose. It obtained a certificate at the Horticultural Society.

Jupiter, (Stedman,) 1844.—Light colour.

Kitty Fisher, (Blake,) 1844.—Light rose, with a veiny spot.

Lady Farnham, (Henderson,) 1845.—Blush, with veiny crimson cloud on top petals, and light margin ; second rate.

Lady Peel, (Henderson,) 1844.—Pink, with a white centre, and small dark cloud on the top petals.

Lord Stanley, (Forster,) 1845.—Purple rose, colour of Paragon.

Lurida, (Beck,) 1844.—Has clouded upper petals, and lower petals veined with pink. Gained a prize as a seedling last year, at the Royal Botanic Society.

Marc Anthony, (Beck,) 1845.—Rose pink, with dark cloud, and pink margin ; the flower is rather small, but very even, and of good form and substance.

Marcus, (Beck,) 1845.—Rose, top petals clouded, centre white, and lower petals streaked with rose.

Mary Queen of Scots, (Kinghorn,) 1845. —A very promising flower ; white, the top petals with dark cloud, shaded off to purple, and edged with white ; lower petals tinted ; the colour is desirable.

Milo, (Cock,) 1844.—Dark red, top petals clouded ; second-rate.

Miss Holford, (Gaines,) 1845.—Blush red, with large dark marone clouding on the top petals, shaded off to a light edge, and of large size.

Mount Etna, (Hoyle,) 1845.—Valuable for its brilliant colour, which is a rich deep crimson ; the upper petals are nearly covered by clouding of very dark tint, almost black, surrounded by a margin of crimson scarlet ; the flower is rather uneven, but has a brilliant appearance. It is otherwise well formed, and of good substance. It obtained a certificate at the Horticultural Society.

Mrs. Hanbury, (Blake,) 1844.—Light rose.

Mustee, (Beck,) 1844.—Rosy pink, with dark marone clouding on the top petals, which are irregularly edged with pink. It gained a certificate at the Horticultural Society.

Napoleon, (Kendall,) 1844.—Rosy crimson coloured, with dark blotch ; said to be a very early bloomer.

Orion, (Cock ?)—Bright red, the top petals with dark cloud, shaded off to a scarlet edge.

Othello, (Beck,) 1844.—Purplish rose, with very dark cloud nearly covering the top petals, almost black, with a rosy margin.

Painted Lady, (Forster,) 1845.—Bright rose, with a pure white centre, and irregular dark cloud, shaded off to a scarlet red, and becoming quite pale at the margin. It obtained a certificate at the Royal Botanic Society.

Paragon, (Forster,) 1845.—A very even flower, of great promise ; colour, deep purple rose, top petals with large, very dark, almost black clouding, margined with purple rose ; under petals of the same purplish tint, centre pale. Obtained certificates both at the Royal Botanic and Horticultural Societies

Patrician, (Beck,) 1845.—A large flower, with clouded upper petals edged with crimson, and lower petals of light rose pink. It obtained a certificate at the Royal Botanic Society.

Pericles, (Forster,) 1845.—Deep rose; the top petals with dark clouds, shaded off to rose at the margin, and the centre white: form, tolerably good.

Prairie bird, (Beck,) 1845.—White, with a deep coloured blotch margined with white; expands well. It obtained a certificate at the Royal Botanic Society.

Prince Alfred, (Gaines,) 1845.—Rosy with a purplish tint; the upper petals clouded.

Prince Alfred, (Chapman,) 1845.—Rosy with dark irregular cloud.

Pompey, (Beck,) 1845.—Rose pink, with dark cloud, and red margin to the upper petals.

Queen of the Isles, (Beck,) 1845.—The upper petals are clouded with dark marone, shaded off to rose at the margin; the centre is white, and the lower petals rosy, with streaks of darker red.

Red Rover, (McOnack,) 1845.—Light red, clouded.

Refraction, (Robinson,) 1844.—Light pink, with large dark spots.

Resplendent, (Beck,) 1844.—Interesting chiefly as being a light, and somewhat bright red, approaching to scarlet.

Robert Burns, (Kinghorn,) 1845.—Rosy purple, with dark cloud.

Rob Roy, (McOnack,) 1845.—A large thin flower, blush, with dark clouded top petals narrowly margined with blush pink.

Rosea superb, (Henderson,) 1844.—Blush, with the top petals with dark cloud shaded off to rose, and veined.

Rosetta, (Beck,) 1845.—Rosy crimson, the top petals clouded with marone. It obtained a certificate at the Horticultural Society.

Rosy Circle, (Beck,) 1844.—Bright rose colour, with dark cloud on the top petals, the centre white. It obtained prizes both at the exhibition of the Royal Botanic Society, and also at the Horticultural Society.

Salome, (Catleugh,) 1845.—Rosy purple, with dark cloud. It obtained a certificate at the Royal Botanic Society.

Satellite, (Forster,) 1845.—Light crimson, with pure white centre, top petals with a dark clouding; lower petals with a dash of scarlet, remarkable for brilliant colour. It gained a certificate at the Royal Botanic Society.

Shiner, (Beck,) 1845.—Light red, with a small dark blotch on the top petals; chiefly useful for its colour. Obtained a certificate at the Horticultural Society.

Sir R. Sale, (Henderson.)—Light red, with the top petals marked with scarlet veiny blotches.

Sunbeam, (Stains,) 1845.—Light rosy red.

Sunset, (Beck,) 1844.—Rosy crimson, with clouded top petals, and rosy pink lower ones. It gained a certificate at the Horticultural Society.

Sunset, (Hoyle,) 1845.—Light red, the top petals of a more brilliant red, clouded a little near the centre.

Susan, (Lee,) 1844.—Blush with lighter centre, and dark irregular blotch on top petals.

The Pearl, (Catleugh,) 1844.—Clear white, with a small crimson spot on the upper petals in the way of some of the older varieties; this gives it a novel appearance at the present day, and it will be a useful flower. It obtained a prize at the exhibition of the Horticultural Society.

Titus, (Beck,) 1845.—Rosy pink, the top petals clouded, and with a margin of bright red.

Zillah, (Forster,) 1845.—Rosy, the top petals with dark cloud, and narrow margin of rose; centre white; lower petals mottled with rose.

The seedlings of 1844, above referred to, may be regarded as having their qualities fully tested; and while many may be useful in collections from their colour, or to afford some variety of kinds, there are some few which must be regarded as leading varieties at the present day. It ought not, however, to be inferred that those here noticed and referred to are all which this country affords. In many parts of the country there reside very enthusiastic improvers of the Pelargonium, and it is only fair to conclude that they may have produced some varieties of merit. Those referred to in this list, however, may be regarded as a fair index of the state of the Pelargonium in the neighbourhood of the Metropolis.

IXORA ODORATA.

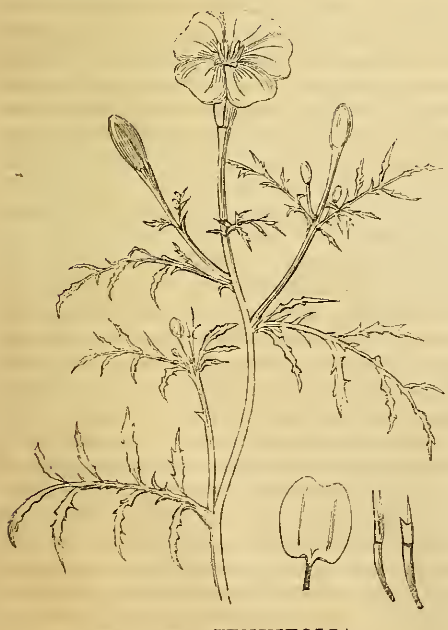
(Hooker.)

THE FRAGRANT IXORA.

This fine stove shrub was received by Messrs. Lucombe, Pince, and Co., of the Exeter Nursery, from the continent, under the incorrect name of Ixora Brunonis. Pavetta gracilis is also given as a synonyme.

All the Ixoras are fine shrubs, ranking in the very first class as regards their magnificent blooms: the present species is by no means inferior to those more generally known. It forms an evergreen shrub, with large, opposite, broadly ovate leaves from six to nine inches long, vieing in size, and almost in firmness of texture, with those of the Indian Caoutchouc tree, (Ficus elastica); the lower ones are stalked, the upper ones sessile, or without distinct stalks. The flowers are produced in a large, branching, spreading terminal panicle, which in good specimens is a foot or more in diameter; the ulterior ramifications of the corymbs each produce three flowers; these are from four to five inches long, consisting of a very long slender tube, expanding into four ovate spreading segments; the tube is red below, white above, the white buds tipped with rose colour, the spreading limb white, quickly changing to buff, and becoming twisted. The flowers are most deliciously fragrant. Sir W. Hooker states that he has fine native specimens from Madagascar. It flowers in July and August.

Those who have attended the principal metropolitan floral exhibitions, will readily admit the extreme grandeur and magnificence of the Ixoras under good cultivation. Being all natives of tropical countries, they require the same kind of treatment, which may be briefly summed up thus:—from August till February they require rest, during which they may be in the green-house among other plants, where they will be kept from frost. In February they should be repotted, and plunged in a mild moist heat, of from 60° to 70°; by this treatment they will show fine heads of flowers by April, and they may then be removed to the stove, when they will expand their flowers and remain in beauty for a considerable time. They require a well-drained, sandy, open soil, composed of a mixture of loam and peat.



TAGETES TENUIFOLIA.

(Humboldt.)

THE SLENDER-LEAVED TAGETES, OR MARIGOLD.

This is an annual plant, and indeed one of the best annuals for bedding out with which we are acquainted. The plant forms a dense compact mass of small twiggy branches, having numerous slender pinnatifid leaves, and a profusion of moderate-sized orange-yellow marigold-shaped flowers. The leaves are curiously marked with a row of what appear to be minute orange-coloured dots, but which are in reality minute glands, the secretions of which give the plant a very agreeable balsamic fragrance — very agreeable indeed, when but slightly experienced; but if in too large a quantity, partaking of what is regarded as the disagreeable odour of the common Marigold. The flowers are composed of five roundish florets, which have a deep notch at the end.

This plant is an incessant flowerer. If sown in the spring with other annuals, and kept in pots till the time of planting out, it blooms from the earlier part of the summer quite up to the time of frosts, when all flowers of a kindred nature are cut off. Long before this time, however, almost every other summer ornament has ceased to put forth its blossoms, but this continues blooming on until it is destroyed by actual frost. This is a high quality in an annual plant, and one that renders it especially valuable for bedding out.

During the past summer we have had occasion to witness a bed of this Tagetes planted out on a grass plat, and its beauty, and the quality just alluded to, has very forcibly arrested our attention; some plants that had been raised in a frame, among other half-hardy annuals, and potted singly into small pots, for the purpose of being ready to plant out when required, were allowed to stand by till about the end of June; they were then dwarf bushy plants a few inches high, and in bloom. After the decay of some early flowering annuals in June, these plants were planted out in a bed as before alluded to, and from that time up to the last week in October, the bed was a perfect picture. The plants increased but slowly in height, and ultimately did not exceed fifteen inches, but they continued to make lateral growths until the whole space between the plants was compactly covered, and the beds presented a dense mass of elegant foliage and lovely blossoms. This instance of what has been effected with it, will convey sufficient instruction as to the mode in which it may be managed; nothing could be more complete than the bed alluded to, and nothing more than is here stated was done to secure this completeness. The ground might have been in pretty good condition, but not particularly so.

One quality in this plant, which can hardly be sufficiently esteemed, is, that it never appears littery from the decay of the old flowers; at the end of every small lateral shoot a blossom is produced; this opens in due time, and continues in beauty its allotted period, and then, ere it fades and becomes unsightly, the fresh lateral shoots rise and spread just above it, producing more flowers; these again are followed in the same way, and so on without intermission, so that the plant always looks as if robed in its holiday suit.

The same plant has been sold in some of the London seed-shops under the name of Tagetes signata; and it is probable that it is still to be obtained under that title.

INFLUENCE OF HORTICULTURAL PURSUITS.

The tone of many of the writers on Horticulture is so opposed to that harmonious way in which we wish to carry out our objects, that it would surprise the public were we to give them an idea of the number of essays that we are obliged to reject, only because the writers are not content with giving us what we require—useful information, but must use it as a means of openly or covertly censuring others, who do not happen to think with them upon all subjects, or of whose fame, in some matters, they are envious, or of whose real, or supposed, offence they are unforgiving. To this ill-natured course we have an utter objection, and will not knowingly lend our columns for the best paper in the country with any personal allusion to the doings or the omissions of others, that do not immediately concern the subject. Is there any pursuit in the world so calculated to produce kindly feelings and goodwill among all classes, as that of Horticulture? Can any one go alone, or with company, into a really well-kept garden, without sensations different to all others? Whether it is the beauty or the fragrance of the flowers, or both combined, we know not; but we have noticed people of all classes, the humble and the exalted, the giddy and thoughtless, and the sturdy and contemplative,—the mechanic, the labourer, the tradesman, the gentleman, and the prince,—and all subdued alike, all delighted, although they had different ways of expressing their pleasure. Whatever, then, relates to gardening should partake of the best features—should excite the same feelings. Next to the delight experienced in a garden, is the contemplation of it. Acrimonious altercation, angry discussion, personal allusions to any one's disparagement, are all out of place. If a man can grow a thing better than his neighbour, he may congratulate himself on his success, but not triumph over his competitors further than receiving the reward of his achievement. His less fortunate brethren then add greatly to his pleasure by the acknowledgment of his superiority. Let him plume himself upon his attainments in a tone which boasts of his own talent and depreciates that of others, and they seek for reasons less creditable than superiority to account for his present success. If a man cannot pursue gardening without acrimonious feelings—if Horticulture cannot be promoted without jealousy and ill-nature predominating in a man's heart, that man must be bad, and can pursue nothing calmly and temperately. Society and science are damaged by such people whenever they can take a leading part; and it is the best reason in the world for avoiding at all times the election of such to office. If such men are permitted to write according to their own nature, and indulge their bad feelings by personal allusions or arrogant assumptions, they would not only be always in broils themselves, but they would involve every work in which their writings were admitted. We dislike all such people, and object to all such papers. We should like to cultivate the higher-minded notions. We desire to see Horticulture perfectly neutral ground, on which men of all opinions in other matters should meet, like the merchants of all nations on 'Change. From the moment a man enters a society to the time he quits it nothing but the objects of that society should be permitted by him to occupy his thoughts; and if any overstep the bounds, and introduce discordant subjects, his best friends should turn round upon him and check it. There cannot be too severe a fine imposed on all who transgress the rules by mentioning subjects foreign to the intention of the meeting, and derogatory to any living man. If societies are strict in any one point, it should be in this, that two of the most opposite tempers, feelings, intents, and opinions, personally opposed on every conceivable point, should, in the society for the promotion of Horticulture, lay down their arms, proclaim a truce, to bury, not their dead, like two opposing armies, but their animosity. Were this insisted on, societies must prosper,—were this enforced, the science must advance; and, with the necessity of doing our part before our eyes, we have determined that no articles in this work shall encourage party or personal differences; and that, wherever we can show the advantages of harmony and friendly feeling, we shall not fail to do so. Our aim is to discourage everything but the advantage of the science and those engaged in it. Whatever will instruct, inform, and improve those but little acquainted with gardening; whatever will promote the interests of those engaged in it as a profession, will always be found paramount in our highly patronized Miscellany; and if among our readers there be any who can instruct others, instead of requiring instruction themselves, the best thing they can do, is to improve on anything they find in these columns, and let their fellow men derive the advantage. But there are some who not only forget that all subjects should give way to Horticulture at Horticultural meetings, but actually find in the proceedings themselves something on which they can raise a quarrel, or say that which gives pain to others. This should be discouraged at once—nipped in the bud; nobody should answer such matters, or if they do, they should remember, "that a soft answer turneth away wrath." We never hear of disagreements in a society without thinking how much some people must have forgotten themselves to differ upon such a quiet subject,—how much others must have forgotten their duties when they noticed any outbreak in a manner that gave even an excuse for a reply. All angry spirits should lie as quiet as flint and steel; and everybody who causes a collision, or encourages one, is answerable for all the consequences which arise from the first sparks that are produced.

HORTICULTURAL NOTES.

Thornfield Pine Apples.—One peculiar feature in the culture of these fruits, adopted by Mr. Hamilton, of Thornfield, is the fruiting the sucker on the old stool: this is nature's way of proceeding. Another is the preservation of the old roots for a much longer period than is usually practised—say for seven years. Another is the maintenance of a high and moist atmosphere all the winter. Another consists in a much more moderate use of bottom heat than is usual; and the plants are planted out in a bed of soil, at about 82°. In reference to preserving the old stool, it seems strange that the practice should have been so little followed, as it was long since recommended by the late T. A. Knight, Esq. If the old stump is a storehouse of organizable matter, why not retain it? Who would think of cutting away all the green pseudo-bulbs of an orchid? The preservation of the old roots for many years stands boldly opposed to the disrooting system. According to Mr. Hamilton, there are two serious evils attending the attempts to get abundance of new white fibres up the stem, viz. the necessity of stripping a considerable amount of valuable foliage; and that these white surface roots, if procured, will, in all probability, promote premature constriction, if not decay in the old roots, thereby losing the assistance of thousands of mouths, adhering fast to various media, capable of supplying all the wants of the plant. A high and moist temperature in winter is the most disputable point. The low degree of bottom heat is adapted to other parts of this mode of culture; and, indeed, for Pine-apples cultivated on any plan an excess of bottom heat is the most serious evil to which they can be exposed. Somewhat higher than the Thornfield mean degree of bottom heat may, however, be allowed on the old system of growing in pots. At Thornfield, this bottom heat is maintained by a heated chamber beneath the fruiting bed, so that there is no reason for disturbing the roots.—*R. E.*

Garden Literature.—A garden periodical should be written in language which all may understand, and which will not do violence to the gentleman and the scholar. It has been thought that it should be done in two parts, the one appertaining to the humble labourer, and those things which are useful to him; the other more adapted to the higher class of amateur cultivators, who delight in the ornamental. At the first moment it seems a reasonable suggestion; but, calculating from experience in such things, we have a right to suppose that the frugal and industrious labourer will not always remain so, and we should rather provide for such as will advance in the scale of society, than presume to draw the line between those grades, which will, under happy auspices, be only so many steps for the good man to ascend. There is nothing to prevent the frugal and industrious labourer, who is under a good landlord and master, from advancing every year of his life; and to provide a book that is only to answer his purpose while labouring among cabbages and potatoes, would be to assume he is in his proper station, instead of exalting his ideas to a better. It is one thing to instil emulation, another to make a man dissatisfied: that which teaches him to make the most of his garden, and invites him to produce a better growth than his neighbour, teaches him the value of time and money. It calls into active service the child who is only able to pick up a weed, or carry a pitcher of water, and the savings from a few rods of ground, well managed, soon enables a man to master an acre. There is, in the present state of society, no bounds to the success of the most humble man in the country, when he is frugal, industrious, and persevering. Every day teaches us that the highest stations are frequently attained by individuals of probity and honour, who nevertheless begun with nothing but a good character: and there is not a cottager who may not become an opulent farmer in time, if he anxiously makes the most of everything, and after he has made money learns how to keep and accumulate it. Therefore should a garden periodical be adapted for the higher classes as well as the humble; and while it teaches the cottager to grow vegetables for his family, show him also how he may best cultivate a garden upon a larger scale.

The Primitive Colours.—Notwithstanding it has been said that the three primitive colours do not occur in one genus, the

Tropæolum comes pretty nearly to a proof of the contrary. If it be allowed that the Tropæolum azureum (so called) be indeed a Tropæolum, then we have the brightest yellow that can be found in many species and varieties; the scarlet in several—for instance, tricolor, Lobbii, and some others; and the blue in azureum; it may be said the blue is not a true blue, but we think it blue enough to upset the theory. Again, we have the colours, imperfectly, to be sure, but still pretty nearly, in the Hyacinth. There we have red, blue, and yellow; but certainly the yellow is not so bright as the Crocus, the scarlet not so good as the Geranium. Again, once more, and that shall be the last we mention, the Auricula: there we distinctly have yellow selfs very bright and pretty, red selfs, and blue selfs, and so completely the same genus, that we have seen all come from the same batch of seedlings. The least brilliant of the colours is the red, but still the approach is near enough to shake the theory. If it is meant that the three colours shall be pure, why there are very few genera that can boast one primitive colour; for there is not a red among all the Roses, if the brilliant scarlet of the Geranium is to be the test; nor is there among the whole tribe of Camellias; and how rare is it to find the pure blue! The Nemophila and the Convolvulus, and some few others, may be considered pure, but some of the most brilliant of our (so called) blue flowers, have a tinge of red in them, to make them purple; and if the theory that there are not three primitive colours in one genus, means that they are not all three to be found in their purity, we must give up; but we have shown that there are red, blue, and yellow in the Tropæolum, the Auricula, and the Hyacinth; there may be in more.

Education of Gardeners.—It has been agreed "on all hands," that education is a blessing. The power of reading is essential to man's happiness and improvement; and it was a wish worthy of a king, when George the Third "hoped to see the day when every one in his dominions could read the Bible." There are no means of profitable study so generally necessary to all classes, whether they be humble or exalted, as reading. Every member of a class is, more or less, instructed in the knowledge of what is passing; and it is to be regretted that any portion of the working classes should be so meanly paid as to prevent them from reaping the full advantage of a class periodical devoted to their welfare. The gardener wants information of all that has taken place concerning his profession; encouragement to persevere under disadvantages; and advice as to his proceedings: he wants his interest promoted, his rights advocated, his duty pointed out: he wants the useful contents of every work on the subject of gardening judiciously abridged and faithfully recorded: he wants to see the whole gardening world in miniature, and all its finished portraits taken in spirited outline—to see it shown that the employer is not benefited by paying low wages, and that gardeners have their rights as well as duties. How few venture to do this!

Mowing Machine.—A new mowing machine, on nearly the same principle as that patented by Budding, has been in operation during this summer, at the Duke of Newcastle's mansion, at Clumber Park, in Nottinghamshire. It has been found very much to facilitate the keeping in order of the lawns, the mowing of which, by the ordinary physical process, is both tedious and laborious; and the consequence of this facilitation is, that the lawns have been very much improved. The editor of the "Gardener's Journal" thus speaks of it from personal inspection:—"The machine has been in constant use in the garden at Clumber for upwards of three months. It is constructed on the principle of Budding's patent mowing machine, but altogether stronger, and, of course, less liable to go out of repair; the cutters are forty-two inches in length; it is drawn by one horse, requiring a boy to lead the horse, and a man to direct the machine. Though it has been in almost daily use for nearly four months, it has not required any repairs. The saving of labour has been found to amount to seventy per cent."

Striking Cuttings.—A speculation with regard to one of the most common operations in a nursery would seem odd if it went to the reversal of everything hitherto done. Old and experienced gardeners would hardly hesitate to say, that unless you cut up a slip intended for striking, to close under a joint, it will not strike unless the joint be put under ground, when, in some cases, it strikes from the joint itself, and the wood below it emits no roots whatever. Now, Mr. Fairbairn, of the Wandsworth Road, strikes his Camellia stocks by cutting only one joint to each. This joint is attached to an inch of the shoot which is under the joint, and is put in the ground to strike, while the single joint is left above, to form the plant. His account of the operation is, that they strike much more freely, and throw better roots equally all round the stem. The consequence is, too, that when he pots out his stocks, they are not two inches high, and yet have plenty of root to establish them, and set them growing directly. Since this practice has been made known, others have introduced it with the Fuchsia and with hard wooded plants, report says, with great success; this, however, has not reached us upon such authority as to enable us to announce it as a fact.

EARTHING UP POTATOES.—On this subject, Mr. G. W. Johnson says:—"I have long had doubts relative to earthing up Potatoes being a beneficial practice, and now I am convinced that it is detrimental. The variety employed in my experiments is the Pink Kidney; all the sets were planted at the same time, (the first week of April,) in rows two feet apart and eighteen inches in the rows, and taken up this day (September 24) and weighed. The average of all my experiments gives exactly an increase of one-fourth in favour of not earthing up; but some of the plots gave still more, viz. as 42 lbs. is to 31½ lbs. The experiment has been made on the sixteenth of an acre of good deep loam, with a cool, moist subsoil."

CHARRING VEGETABLE REFUSE. — The great advantage of employing refuse which has been submitted to this process, in the cultivation of plants, is now pretty well known. A simple way of charring the vegetable refuse of a garden, is this:—Take a few dry faggots, mixed with dry straw, and set up for a centre; around these, build up the rubbish, placing the chippings of wood, &c. next the faggots, and the greener parts, together with tree prunings, near the outside. Around this, build with sawdust, or green turf, leaving an avenue for lighting the fire. When properly lighted, the hole at the top is closed by degrees, and holes are made lower down the heap, which are in their turn closed up, as the fire draws down, and this is continued to the bottom of the heap. When all is charred, the holes may be all stopped, and additional covering laid on, to prevent entirely the access of air. In a few days the heap may be opened, and the material will be ready for use; the larger parts for draining flower-pots; the smaller for applying on the ground.

THE TEA PLANT IN CEYLON.—Our Ceylon friends are rejoicing in the cultivation of the Tea plant, which has been imported by the house of Messrs. Worms into that island, and is said to be in a thriving condition, many young plants having been raised from the seeds of those originally introduced; and they anticipate that, ere long, Tea may become another important branch of their colonial trade. We wish them all the success they hope for; but as they do not seem to have tested the quality of the leaf, we would advise them not to be too sanguine in their expectations. Ceylon lies too far within the tropics to offer a climate like Assam, which lies without them; the plants may thrive to appearance, but that is not a demonstration of their quality: we have seen them six feet in height at Penang, and in as healthy a state as could be desired, but the leaf had no flavour, and although thousands of Chinese husbandmen and gardeners cultivate spices and other tropical productions on the island, yet not one thinks it worth while to extend the cultivation of the Tea plant; those we saw were in the Company's garden, then rented to Chinese, but they laughed at the idea of converting the leaf into a beverage. The Ceylon planters should put the leaf to the proof before speculating on a large scale.—*Madras Crescent.*

THE GLANDULAR ALMOND TREE. (Amygdalus glandulosa, Siebold.)—M. Paillet, who, without doubt, possesses the most beautiful collection of plants from Japan of any Parisian gardener, cultivates a charming little shrub from Japan, under the name of Amygdalus glandulosa, covered in April with pretty single rose-coloured flowers, which have numerous stamens. Its shoots are slender, and its leaves straight, lanceolate, and sharp pointed. I do not find the name in the work of Siebold and Zuccarini. I think, from the habit of this shrub, that it is a Plum having much affinity to Prunus chinensis, which nurserymen call the double dwarf almond; indeed, it may be no other than the single-flowered type of that species. It is hardy, and bears the winter in the open air without protection.—*Pépin, in the Revue Horticole.*

NEW STRIPED PETUNIA.—The greatest advance made in the Petunia during the present year, consists in the realization of striped flowers. One which we have seen, and which we believe is in the hands of Miller, of Ramsgate, is of a pretty slate-blue ground colour, and this is varied by numerous feathered pencillings of white, giving the flower the appearance of being covered with open net-work; the eye is dark. The character of this style of marking is at once novel and pleasing. The flower is rather above the medium size, and by no means badly formed; so that it may be looked on both as an acquisition, and as the harbinger of a new race of this popular and ornamental plant. While on this subject, let us add one word for the old Petunia integrifolia, the original purple Petunia, with flowers much smaller than those seen at the present day: not one of all the new varieties can vie with that old neglected (probably lost) species in the brilliancy and profusion of its blossoms, when planted out in a favourable situation in the summer season. As a specimen on a lawn, enclosed by a neat wire trellis about three feet high, and a foot broad, we have seen it unrivalled; its branches projecting on all sides beyond the wire-work, which was hidden by countless thousands of its lovely flowers.—*M.*

THE POTATO ROT.—It appears, from recent extensive inquiries, that the disease about which so much has been written, differs in no respect from the rot which has been experienced in former wet and cloudy seasons;

and that the fungus which appears on the outside of the skin is one of the effects of the rot, instead of any portion of the cause. Experienced men say, that in all wet seasons the same disease has been found to prevail more or less. The quantity of good Potatoes is not less than in former seasons; and though the rot prevails a good deal more than has been experienced in previous years, the evil has been greatly exaggerated, and the increase in the quantity planted, will nearly, if not fully, make up for the deficiency.

Cydonia japonica.—The fruit of this handsome flowering shrub, which is abundantly produced, is a great improvement to an apple tart, if cut into thin slices or finely minced. One fruit is sufficient for a small tart, and two for a large one.—*F. S.*

Psidium Cattleyanum.—This is one of the best of the Guavas, and furnishes an article of commerce which is known in the higher circles as a great luxury, and is imported under the name of *Guava jelly*. The plant is a native of South America, and may be grown in a good green-house. If there is the convenience of a stove, vinery, or peach-house, into which it can be removed for a short time during the early part of summer, an abundant crop of fruit may be secured. In winter it requires protection from frost.—*M.*

New Aucuba.—One of the best new hardy shrubs which we have recently seen, is a new variety of the common Aucuba japonica, in the nursery of Mr. Low, of Clapton. It appears, judging from a small plant, to have leaves larger than the original kind, of the same figure, and differing chiefly in having a large, irregular, oblong, golden-coloured blotch occupying the centre of each leaf, the outer part, or margins, being of the same spotted character as the ordinary leaves of the original kind. It is at present scarce, but there can be little doubt of its being as hardy as the well-known favourite Aucuba japonica.

The Potato.—While hundreds of people, who grow Potatoes from cut sets are deploring the failure of their crops, we have met with no instance in which those who planted whole sets have failed in the least degree. This ought to determine most people to save the largest of their undersized Potatoes for planting, instead of cutting up handsome and large tubers.

Cestrum aurantiacum.—This plant is decidedly one of the gayest autumn flowering green-house shrubs we have. It has a fine bushy habit, and handsome oval foliage: the growth is free and vigorous; and the little bunches of orange-coloured blossoms are very freely produced. After the flowers are past, they are succeeded by a crop of white berries, something like those of the Snow-berry tree, and these give the plant a very ornamental appearance through the winter.—*M.*

R. CLAY, PRINTER, BREAD STREET HILL.